The newsweekly of enterprise network computing

NetworkWorld

August 16, 1999 Volume 16, Number 33 www.nwfusion.com

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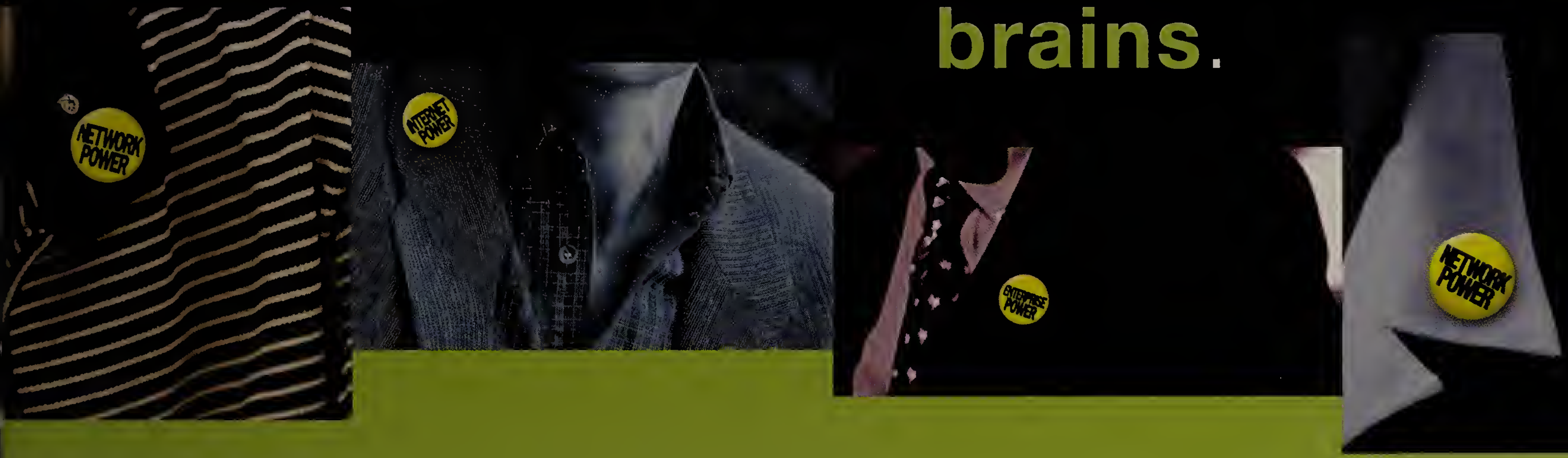

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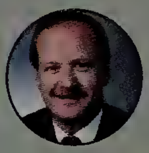
Keynotes

Listen to industry leaders share their insight, knowledge and experience about the new economy

Tuesday, September 14 9:00–10:00am
Rich McGinn
CEO
Lucent Technologies



Tuesday, September 14 5:00–6:00pm
Mark A. Christensen
Vice President and General Manager
Network Communications Group
Intel Corporation

Wednesday, September 15 9:00–10:00am
Kathleen B. Earley
President
AT&T Internet Services

Wednesday, September 15 5:00–6:00pm
William Larson
CEO and Chairman of the Board
Network Associates

Thursday, September 16 9:00–10:00am
Jorma Ollila
Chairman of the Board and CEO
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InteropNet Event Network (eNet) provides a look at the most current technologies and equipment on the market today. Demonstrating what's possible in a live environment, eNet is up and running in three days proving product reliability and providing unequalled networking education from the engineers who make it all happen. With over 500 exhibitors, meeting and conference rooms connected to the Internet, as well as Novell Connecting Points, you'll see technologies run just as they would on some of the biggest networks in the world.

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NETWORLD+INTEROP 99

LINUS HOLDS COURT Linux creator previews operating system upgrade. Page 14.

LUCENT GOES SHOPPING Snaps up INS for $3.7 billion, Xedia for $246 million. Page 6.

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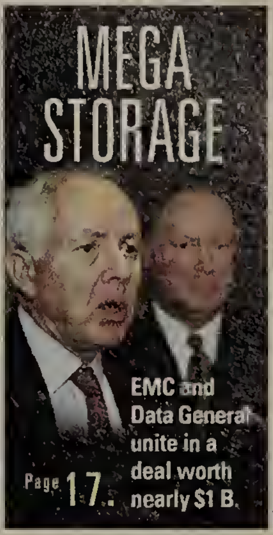
MEGA STORAGE


EMC and Data General unite in a deal worth nearly $1 B. Page 17.

AP PHOTO

Frame fiasco puts heat on MCI WorldCom

BY DAVID ROHDE

You could call it the great MCI WorldCom Frame Relay Brownout of '99, but in a sense you'd be wrong.

Insiders say the congestion problems that plagued an estimated 3,400 of the carrier's 14,000 frame relay customers last week really should be called the Legacy WorldCom Network Brownout of '99. While the old WorldCom frame relay net bogged down, MCI's frame network actually stayed up through the crisis.

But the fact that the merged company was unable to switch traffic from the WorldCom network to the MCI net indicates how far MCI WorldCom still has to go to integrate its global data platforms.

And although the congestion problem stemming from a botched Lucent switch upgrade was largely fixed by the end of last week, users blasted MCI WorldCom for not responding quickly and failing to communicate the nature of the problem.

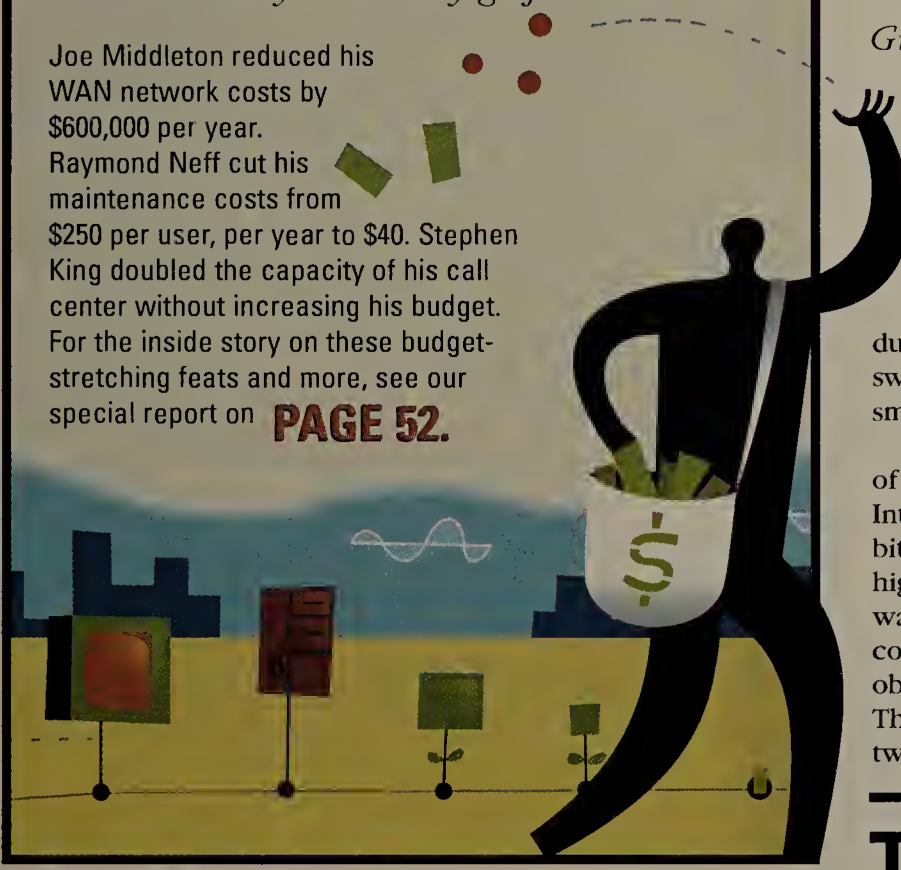
"If WorldCom could have routed traffic to the MCI switches, that would have

See **MCI WorldCom**, page 77

STRETCHING *your network* BUDGET

How to make your money go farther.

Joe Middleton reduced his WAN network costs by $600,000 per year. Raymond Neff cut his maintenance costs from $250 per user, per year to $40. Stephen King doubled the capacity of his call center without increasing his budget. For the inside story on these budget-stretching feats and more, see our special report on **PAGE 52.**


DOUG ROSS

10G Ethernet WANs?

BY JEFF CARUSO

When you think of WAN technologies, Ethernet doesn't usually spring to mind — but it may soon.

MCI WorldCom and other service providers are eyeing 10-Gigabit Ethernet as an alternative to packet-over-SONET and more traditional WAN technologies. And makers of carrier gear are pushing for specifications in the evolving 10-Gigabit Ethernet standard that would accelerate its use beyond the LAN.

For example, the high-speed study group of the IEEE is debating whether to standardize on 10G bit/sec or

See **Ethernet**, page 16

Intel to make big net splash

Gigabit Ethernet switch, new routers on tap.

BY JIM DUFFY AND TIM GREENE

SANTA CLARA, CALIF. — Intel will significantly expand its network arsenal next month with the introduction of a gigabit data center switch and new routers for small and midsize enterprises.

Already a leading supplier of Gigabit Ethernet adapters, Intel will add a modular gigabit switch that can serve as a high-performance Layer 3 forwarding engine at the network core, according to documents obtained by *Network World*. The company will also roll out two new routers to connect branch offices and regional sites to each other and to central sites.

In October, Intel is expected to take the wraps off a central site router to aggregate links coming in from the new branch and regional site

See **Intel**, page 16

More Online

- **Details of Intel's net products.**
- **A look at Intel's purchase of Shiva.**

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The server name game

BY DENI CONNOR

Buttercup, Cyclops, Kangaroo and Hindenberg. HolyCrap, Lotsaluck, Monica and Titantic.

Well, we asked for 'em.

The above is just a handful of the hundreds of wacky, funny, clever and risqué names that Network World Fusion Web site users submitted for our first Great Server Name Bake-off. Paula Hinchliffe, a network administrator at Sealmaster in Kent, Ohio, won the contest with her FrankenLinux submission (see story, page 76).

And while the submissions provided us with lots of laughs, they also raised some key points about how and how not to name servers and domains. Key things to consider are picking a naming convention that can scale with your network and choosing names that are easy to remem-

See **Servers**, page 76

Newspaper $5.00

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Left to right: Compaq AlphaServer, Compaq ProLiant, Compaq NonStop Himalaya

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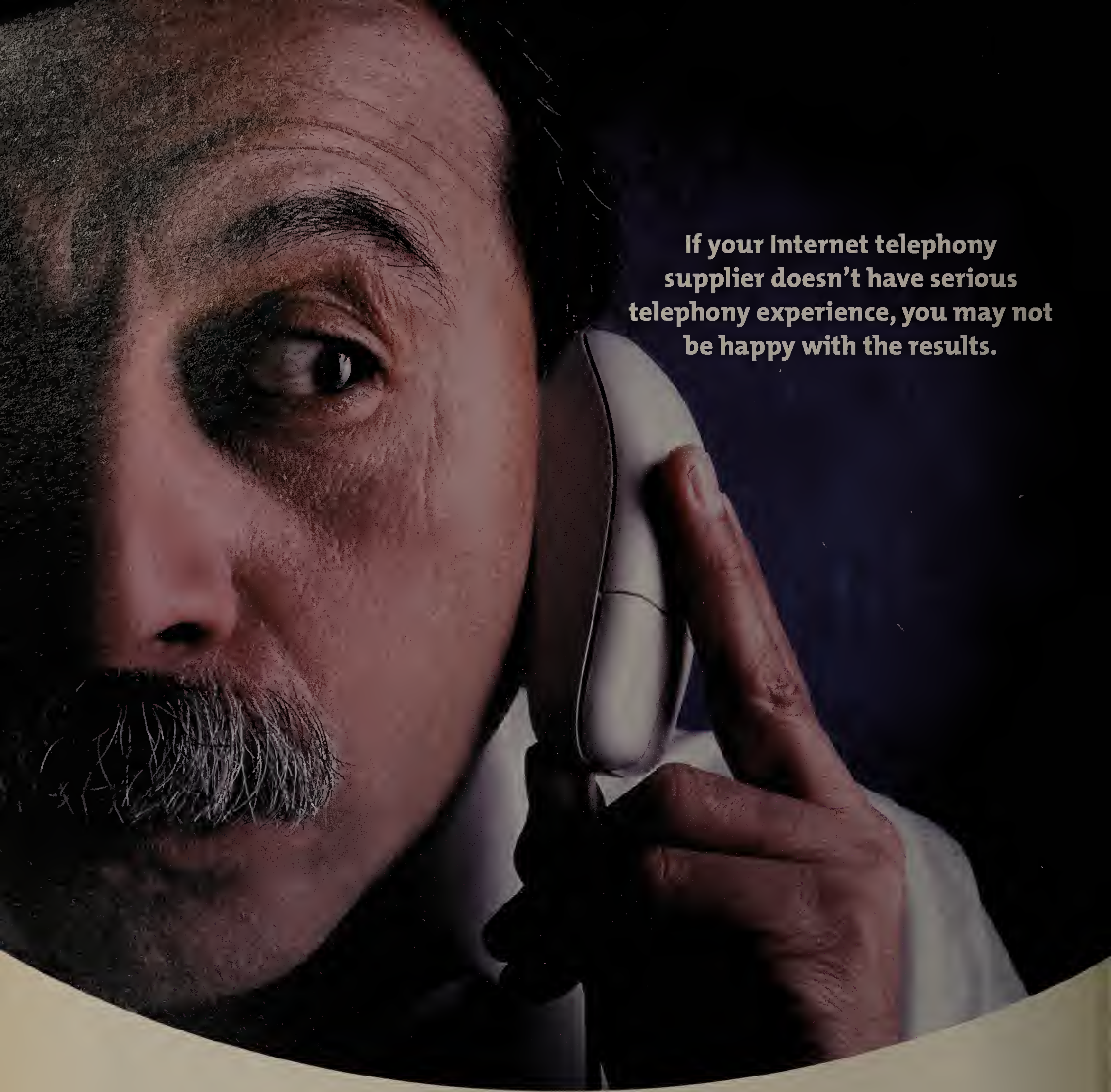
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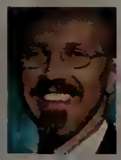
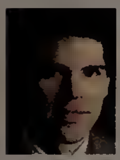
THIS WEEK ONLINE


Death to smileys. Seems our pal Mark Gibbs struck a nerve last week with his column on smiley faces — and he's not the only one who is sick to death of those dumb emoticons. Vent along with him in a forum we've set up to give them their just desserts (unless you like them, in which case, come online to convince us why we're wrong). **DocFinder: 4241**

Intel bulks up. When Intel bought Shiva last year for $185 million, one analyst predicted the move wouldn't be enough to thrust Intel into the upper echelon of network vendors. Read our Page 1 story this week to find out how the company is faring. Then head online to find out more about the Intel/Shiva alliance. **DocFinder: 4235**


Keeping Current. Last week, Cisco announced that it plans to invest more than $1 billion in KPMG to create KPMG Consulting. The joint venture will advise companies on how they can take advantage of the Internet. Fred McClimans argues that this latest move by Cisco blurs the line of impartiality. **DocFinder: 4242**

AOL gets down to business. An agreement between Novell and America Online was announced last week that would give instant messaging a boost in the business world (see page 12). While the two allies hope to expand AOL's reach and get Novell users communicating with each other, the real goal seems to be to thwart Microsoft. Check out our ongoing coverage of the instant messaging battle. **DocFinder: 4243**

How to get onto Network World Fusion

Click on Register on the home page and follow the instructions. Subscribers, keep your NWF number — highlighted on the front cover's mailing label — handy during registration. Nonsubscribers must fill out an online registration form.

NetworkWorld

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Special Focus

HERE'S VOICE OVER DSL

This alternative to T-1 services could save you money. Page 36.

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FEATURES

STRETCHING your network BUDGET

Joe Middleton reduced his WAN network costs by $600,000 per year. Raymond Neff cut his maintenance costs from $250 per user, per year to $40. For the inside story on these budget-stretching feats and more, see our special report on

Page 52.

REVIEW:

Need help moving from Windows NT domains to Windows 2000 Active Directory? We review three migration tools and select Aelita's Enterprise Suite as the winner. [illegible]

DUG ROSS

NEWS BRIEFS, AUGUST 16, 1999

FCC rejects call for cable Internet access probe

Federal Communications Commission Chairman William Kennard has turned down a request for an inquiry into whether cable companies unfairly restrict their customers' choices for ISPs, saying government intervention would chill overall development of broadband networks. Kennard last week said he rejected a recommendation made last month by the FCC's Local and State Government Advisory Committee that the FCC begin investigating complaints about cable companies with an eye toward forcing them to open their networks. Local government officials have complained that cable companies such as Time Warner and AT&T are forcing their affiliated ISPs on cable customers.

Wall Data dumps product, loses CEO

Like Internet IPOs of late, the corporate portal market may be losing a little of its luster. Wall Data, which launched Version 3.0 of its Cyberprise portal this spring, announced it would no longer compete in the portal market. Some of the Cyberprise technology will be rolled into the company's more successful Rumba offering, a Web-to-host connectivity product. Wall Data also announced last week that its founder and CEO, John Wall, has "left the company to pursue other interests." The moves coincided with the company's statement that preliminary results from the most recent quarter show an operating loss of between $11.5 million and $12.5 million.

SCO Forum to party like it's 2000

Ever wonder what it will be like in the year 2000? Try going to SCO Forum1999, being held in Santa Cruz this week. During the event, expected to draw between 2,500 and 3,000 people, there will be a New Millennium party, which will simulate the year 2000. "We'll start looting," a SCO source says.

In other SCO Forum1999 news, there will be an update on the Intel-based 64-bit Unix flavor called Project Monterey, complete with release timetables; an update on SCO's UnixWare and Tarantella products; and an announcement that at least two server vendors, Siemens and Fujitsu, will use SCO's NonStop Clusters technology. SCO also intends to announce a new program to advise customers on the viability of using Linux in their networks. SCO currently offers no Linux software.

Hacker goes directly to jail

Kevin Mitnick, the hacker who broke into computer networks and stole credit card numbers and software, was last week sentenced to 46 months in prison by a federal judge in Los Angeles.

Mitnick, 35, who has already spent more than four years in prison, should be eligible for release by early 2000, according to prosecution and defense lawyers in the case. Depending on how the Federal Bureau of Prisons calculates time off for good behavior, Mitnick could be released as early as January. U.S. District Court Judge Mariana Pfaelzer also ordered Mitnick to pay more than $4,000 in restitution. The judge acknowledged the amount was a "token" sum compared to the $1.5 million prosecutors asked for. Mitnick did not have the ability to pay more.

GM centralizes e-business

GM hopes Hogan will be an e-comm hero.

General Motors last week formed a new business group to direct the auto manufacturer's electronic business and electronic commerce efforts around the globe. Called e-GM, the group will seek to unify GM's diverse online efforts with suppliers and customers. The first move by e-GM will likely include constructing a GM "portal" to form a common entry point for the more than 100 Web sites that GM operations independently maintain. Mark Hogan will head e-GM as its vice president.

Down to the wire

Microsoft and the Department of Justice submitted written "findings of facts" last week to U.S. District Court Judge Thomas Penfield Jackson in the government's antitrust trial against the software developer. The government contends Microsoft has a monopoly in the operating system arena and "engaged in a broad pattern of unlawful conduct with the purpose and effect of thwarting emerging threats" to its monopoly. Microsoft said the government failed to prove the allegation or that consumers were hurt by Microsoft. The judge's decision is expected after oral arguments on Sept. 22.

More trouble for Iridium

Satellite telephony provider Iridium on Friday filed for Chapter 11 bankruptcy protection, culminating its struggle to dig out from marketing and distribution mistakes dating from last fall's service launch. The provider of global calling and paging services defaulted on its bank loans the day before. Chief investor Motorola says it thinks Iridium can come up with a bankruptcy restructuring plan within 30 days. Under Chapter 11, companies are allowed to keep operating under court protection from creditors, but if the court doesn't quickly approve a restructuring plan, the venture could fail.

Lucent spends big on INS

BY DAVID ROHDE AND JIM DUFFY

MURRAY HILL, N.J. — By acquiring consulting and management services firm International Network Services last week, Lucent took a major step toward becoming one of the premier providers of enterprise network management services.

But the move also presents a risk to Lucent because the success of the $3.7 billion acquisition actually depends heavily on relationships with Lucent competitors such as Cisco. Further complicating matters is the fact that Cisco owns about 6.7% of INS.

Lucent is expected to close its acquisition of INS by year-end. INS will be merged into Lucent's NetCare division, which provides remote monitoring and other services for enterprises and carriers. Lucent executives conceded that the enterprise networks that Lucent's NetCare division and INS will jointly manage will probably consist not so much of Lucent products, but those of competitors' on the data side, for years to come.

That means relationships with competitors will have to be kept up even as Cisco edges its way into management services. Also last week, Cisco announced it will invest more than $1 billion in consulting firm KPMG LLP's Internet-related services business, which focuses on enterprise network and carrier markets.

Lucent executives have shown a reluctance to go out and spend more stock and cash on enterprise product companies to dislodge Cisco, Nortel, 3Com and other companies from the very data networks Lucent now proposes to manage. "Often customers have made their product choices before they seek professional support capability," says Lucent Executive Vice President Patricia Russo, who has headed up Lucent's aggressive acquisition strategy. "I expect that they will continue to do that."

Russo hastens to add that Lucent and INS professional-services sales staffers will be trained on Lucent's current enterprise data products, none of which currently command even 10% of their respective market segments despite generally good reviews. These include Gigabit and Layer 3 Ethernet campus switches, high-speed workgroup switches and a range of ATM gear, though Lucent lacks basic router and hub offerings.

New relations

"I think it's realistic to expect that we'll have a realignment in our relation-

See **Lucent**, page 77

LUCENT BUYS XEDIA

Lucent's $246 million buyout of Xedia late last week provides Lucent with just the kind of device it loves to include in its enterprise network product portfolio: one that can largely be sold to customers through their carriers as part of a managed service.

Xedia's AccessPoint line of IP VPN routers has been used by UUNET, PSINet, Concentric Network and other ISPs to build VPN offerings. The routers employ class-based queuing, as well as support for the emerging Differentiated Services standard, to provide traffic prioritization in IP VPNs, and add built-in firewall and other security measures.

Xedia's new owner will continue to make AccessPoint sales through value-added resellers and other channels. But Lucent officials made it clear they were especially excited about Xedia's relationships with top service providers.

"A key part of our enterprise strategy is to give carriers better tools with which to serve enterprise customers," says Menachem Abraham, president of Lucent's Enterprise Systems Group.

— David Rohde

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SuperNet set to launch

Research net will put optical-network technology and more to the test.

BY CAROLYN DUFFY MARSAN

A team of government, university and industry researchers is putting the final touches on an experimental, high-speed, nationwide network that offers a glimpse of the Internet's future.

Called SuperNet, the testbed network will provide end-to-end transmission speeds of 2.5G bit/sec — more than 1,000 times faster than today's Internet. Once operational, SuperNet will be a showpiece for the Clinton administration's three-year, $300-million initiative to maintain U.S. leadership in Internet technologies.

SuperNet is already is offering clues to where enterprise and service provider network technology is headed. For example, the program is responsible for the commercialization of high-speed, optical switches currently being deployed by one long-distance carrier. The next phase of the research will focus on protocols and network management tools that will guarantee end-to-end quality of service and security for high-bandwidth applications.

"SuperNet will accelerate the velocity at which new technology is inserted into the Internet," says Hal Edwards, a Nortel Networks official who manages the West Coast arm of SuperNet. "The network management algorithms and control strategies that come out of this effort will make it easier and more cost-effective for corporate customers to run high-bandwidth applications."

Edwards says he expects corporate customers will start to see technologies coming out of SuperNet next year.

"The SuperNet program is extremely important for developing new networking technologies and validating them," says Bruce Murdock, president of Network Elements, a start-up in Beaverton, Ore., that is developing high-performance network engines for routers and switches under a SuperNet contract. "Rather than just developing new products in a lab, SuperNet allows people to test their equipment in real-world conditions."

SuperNet will be spliced together over the next few weeks using fiber-optic lines from AT&T, Bell Atlantic, Qwest, GST Telecommunications and Sprint. Ultrafast optical switches were provided by Lucent, Tellium and Nortel. Avici Systems provided a terabit switch/router.

Mari Meada, who directs the SuperNet program for the Defense Advanced Research Projects Agency, says using equipment and fiber-optic lines from several companies was important because SuperNet needs to mimic the multivendor approach of the current Internet.

SuperNet lets researchers run very high bandwidth applications that would otherwise be cost-prohibitive, says Benjamin Peek, senior fellow at GTS Telecommunications, who estimates the SuperNet infrastructure is worth around $500 million.

"Depending on the distance, a 2.5G bit/sec line could cost as much as a quarter of a million dollars a month," Peek says. "Plus, you can't buy a 2.5G bit/sec line on a month-to-month basis. Long-distance carriers require one- to three-year minimum contracts . . . Even a company like Boeing couldn't possibly conceive of putting together a network like this for an experiment that might fail."

The SuperNet backbone will connect 100 users via six regional research networks that range in speed from 2.5G bit/sec to 20G bit/sec. Researchers will be able to reserve huge amounts of bandwidth for demanding real-time applications, such as telemedicine, distance learning and videoconferencing.

"The ability to have one big pipe that connects these testbeds will be valuable to test all kinds of services for commercial applications. One example is the ability to carry uncompressed HDTV across the country," says Rod Alferness, chief technical officer of Lucent's Optical Networking Group.

Alferness says SuperNet is also important for its ability to test the scalability of the optical-network equipment and net management schemes installed in the individual testbeds.

Most SuperNet links will go online in the next six weeks. By November, researchers will be running high-speed applications on the testbed, Meada predicts.

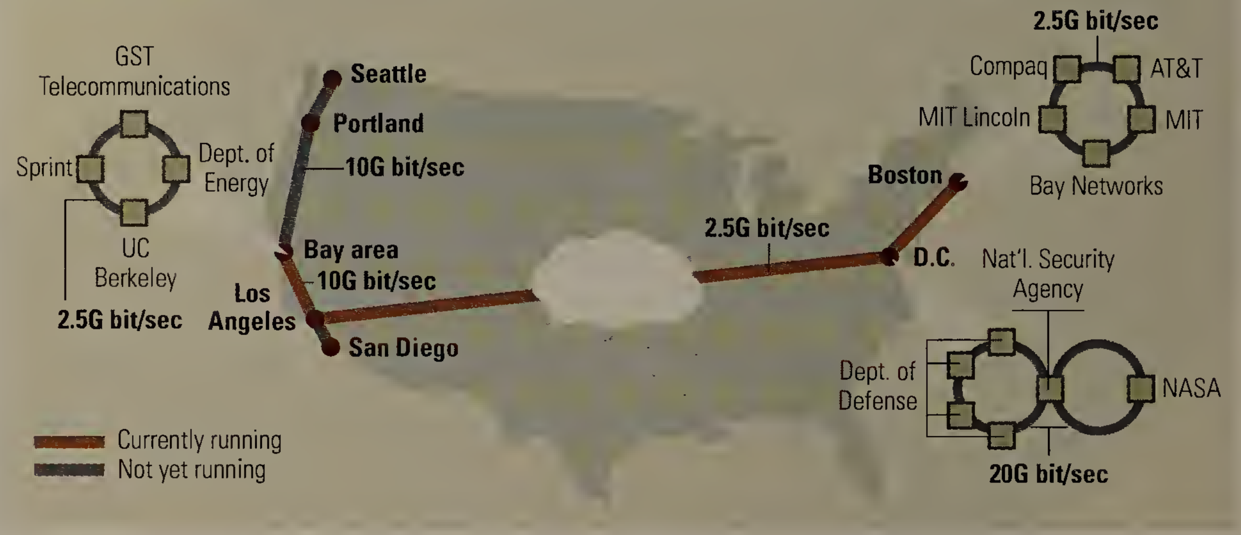
Already operational are:

- A 2.5G bit/sec network connecting five sites in the Boston area, as well as a 2.5G bit/sec line between Boston and Washington, D.C.
- Two optical-ring networks in the Washington, D.C., area that link six government sites at speeds of 20G bit/sec.
- A 10G bit/sec link between Los Angeles and Oakland, Calif.
- A 2.5G bit/sec optical ring connecting four sites in the San Francisco Bay area.

The final step in the network will be a link from Washington, D.C, to Los Angeles — with expected stops in Pittsburgh and Denver. That link should be up within a month, Meada says. ◪

The Gigabit Internet

SuperNet is a prototype network that connects government and private-sector research facilities on both coasts at Gigabit speeds. The network is part of an effort by the U.S. government to advance Internet technologies.



Radware bolsters firewall load balancer

New version works with both transparent and proxy firewalls.

BY ROBIN SCHREIER HOHMAN

Radware next week will announce a new version of its firewall load balancer, a product designed to keep incoming and outgoing traffic moving by distributing it among two or more firewalls.

FireProof 1.31 adds support for proxy-based firewalls — the firewalls that create a virtual IP address and direct all clients to that address.

Previously, FireProof only worked with transparent firewalls, those that go completely unseen by clients. Such firewalls, which are becoming increasingly common, serve only to allow or deny incoming or outgoing traffic.

Firewall load balancing is becoming increasingly popular among enterprise networks. In fact, Radware says its FireProof line now accounts for about a quarter of the company's sales.

Mark Hoover, president of consultancy Acuitive, says most companies only have one firewall — a surefire way to get network congestion. He recommends that companies install multiple firewalls and a firewall load balancer to ensure reliability and redundancy.

Radware's FireProof 1.31 adds support for proxy-based firewalls to its load-balancing duties.

Firewall load balancers come in two flavors: a dedicated appliance, such as FireProof, or a switch, such as Foundry Networks' ServerIron and Alteon WebSystems' AceDirector. Foundry's and Alteon's switches, like Radware's device, also support proxy and transparent firewalls.

Radware claims its FireProof device, which is based on an Intel chip and includes an embedded processor dedicated to load balancing, is nonintrusive and easier to configure than a switch. Alteon and Foundry counter by saying that a switch is much faster and has many more features, such as the ability to perform Layer 2 through Layer 7 switching.

Radware's FireProof performs only the firewall load-balancing function, Hoover says. The device can be less expensive than a switch, he adds.

FireProof 1.31 is shipping now, and lists for $6,500 for a two-port Ethernet version, and $11,500 for a two-port Fast Ethernet model. The four-port Ethernet box lists for $7,500, and the four-port Fast Ethernet device goes for $12,500.

Radware: www.radware.com

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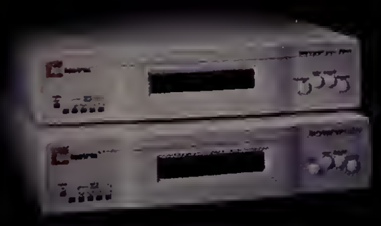

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Web catalog maker reaches out to offline users

BY ELLEN MESSMER

ROCKVILLE, M.D. — Put up a Web catalog for business-to-business purchasing, and your buyers can go online to find the customized pricing for products they're authorized to buy. That's great, except for one thing: Not everyone is online during his entire work day.

SpaceWorks, with its flagship OrderManager electronic procurement software, has come up with a solution to this problem. By year-end, SpaceWorks will ship an enhancement to OrderManager that lets the online buyer store the catalog and screen-order information on a PC or laptop in order to work offline.

When the user goes back online, OrderManager will automatically synchronize the latest catalog information — via XML — with the data on the laptop if there are changes.

Such a feature seems like a no-brainer for high-end electronic catalogs aimed at the "sell side" of the market, where SpaceWorks competes with the likes of Netscape (now iPlanet), Ironside Technologies and Open Market. But according to analysts, SpaceWorks is the first vendor to take this practical step toward accommodating online buyers while they're offline.

"SpaceWorks will be ahead, but everyone will be moving in that direction because they have to," says Yankee Group analyst Harry Tse.

The OrderManager enhancement is the direct result of a collaboration between SpaceWorks and Intel. Intel approached the start-up with the idea about two months ago.

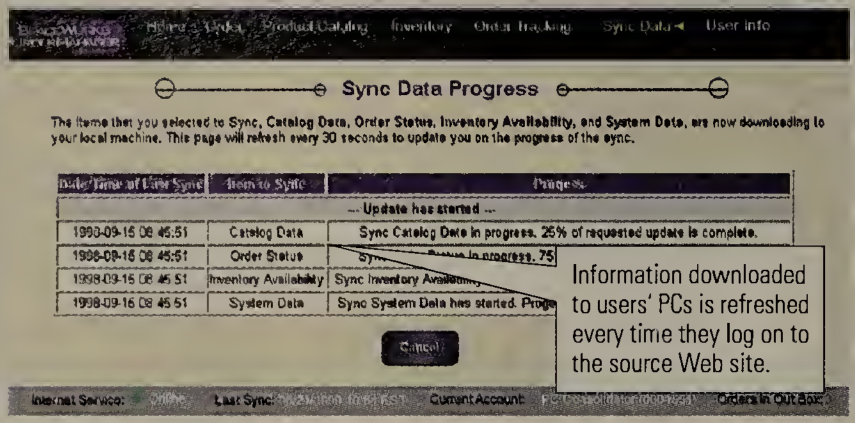
The enhancement will be available in OrderManager 4.1, which, unlike the existing edition, will feature a special client component. The current server software, which runs on Windows NT, Solaris and other server operating systems, will work with any Web browser on the client.

OrderManager currently costs between $250,000 and $500,000. SpaceWorks will charge per-seat for the offline version, but has not yet announced how much the software will cost.

SpaceWorks: www.spaceworks.com

Offline Web browsing

OrderManager lets buyers download large Web-based catalog segments and order screens to their PCs where the information can be viewed more quickly than over the Internet.


Home · Order · Product Catalog · Inventory · Order Tracking · Sync Data · User Info
Cancel
Internet Service: · Online · Last Sync: · Current Account: · Orders in Out Box:

Sync Data Progress

The items that you selected to Sync, Catalog Data, Order Status, Inventory Availability, and System Data, are now downloading to your local machine. This page will refresh every 30 seconds to update you on the progress of the sync.

Date/Time of Last Sync	Item to Sync	Progress
— Update has started —		
1998-09-16 08 45:51	Catalog Data	Sync Catalog Data in progress. 25% of requested update is complete.
1998-09-16 08 45:51	Order Status	Sy… in progress. 75
1998-09-16 08 45 51	Inventory Availability	Sync Inventory Availa…
1998-09-16 08 45 51	System Data	Sync System Data has started. Prog…

Information downloaded to users' PCs is refreshed every time they log on to the source Web site.

Webline debuts new version of Web-to-call center suite

Fidelity Investments testing software to outfit its call center for Web collaboration with customers.

BY ELLEN MESSMER

BURLINGTON, MASS. — Users are browsing your Web site looking to buy or invest, but they're getting lost in the jungle of screens and would like you to show them what to do — right now.

If your call center runs Version 3 of Webline Communications' Web customer collaboration software, which will ship next month, your agents will be able to do just that. New features let agents take charge of a caller's Web view and direct the caller to the information desired.

Fidelity Investments is already testing the Webline Customer Interaction Suite in its call center and plans to roll out the software to support users of Fidelity's investment site.

Today, it can be difficult for call center operators to answer questions about Web-based investing because the call representative doesn't have access to the customer's Web view, explains Jim Messenger, president of operations and technology in Fidelity's personal investments and brokerage group.

"With Webline, either the representative or the customer can literally take control of the browser and direct both parties to a specific place," Messenger says.

To do this, Fidelity has installed two server-based components, the Webline Collaboration Server and the MediaBlender, which can run on WIndows NT, Solaris or Linux.

In use, if a Web visitor presses a "callback" button on his screen and types in his phone number, the message is sent over the Internet to the MediaBlender, which works with automated call distribution (ACD) equipment to pass the request to Web-ready call center agents.

MediaBlender is compatible with ACDs from Lucent, Nortel Networks, Aspect, Siemens and Rockwell.

The call center agent, who by this time knows what the customer is looking at on the Web, then calls the user.

The Webline Collaboration Server supports real-time chat, application sharing and white boarding. It can even let multiple callers collaborate without the agent's involvement.

The first users to get this kid-gloves treatment from Fidelity will be the investment firm's high-end portfolio customers, those with $100,000 or more invested.

Another new feature in the Webline Customer Interaction Suite is the server-based eMail Manager, software for managing high volumes of e-mail inquiries by directing messages to the appropriate people.

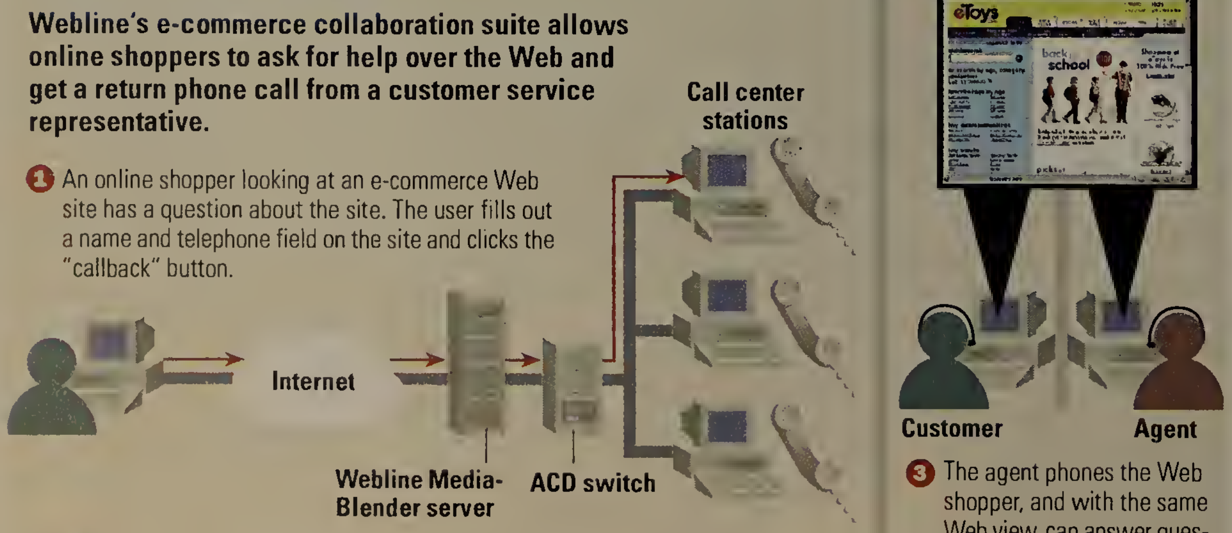
This task is carried out through keyword searches of mail text or other rules-based decisions, such as time of day. The eMail Manager also tracks the message as it gets bumped around and notices if the customer sends another message.

Altogether, the Webline call center Web support suite costs about $1,500 per seat, with the connection of the ACD from MediaBlender adding another $1,000.

Webline: www.webline.com

E-comm customer service

Webline's e-commerce collaboration suite allows online shoppers to ask for help over the Web and get a return phone call from a customer service representative.



① An online shopper looking at an e-commerce Web site has a question about the site. The user fills out a name and telephone field on the site and clicks the "callback" button.

② The request goes to the Webline server and is routed to a call center agent. The agent gets a screen alert to call the online shopper and is given the customer's current URL.

③ The agent phones the Web shopper, and with the same Web view, can answer questions or guide the shopper by taking online control of the user's browser.

Be a Net Know-It-All

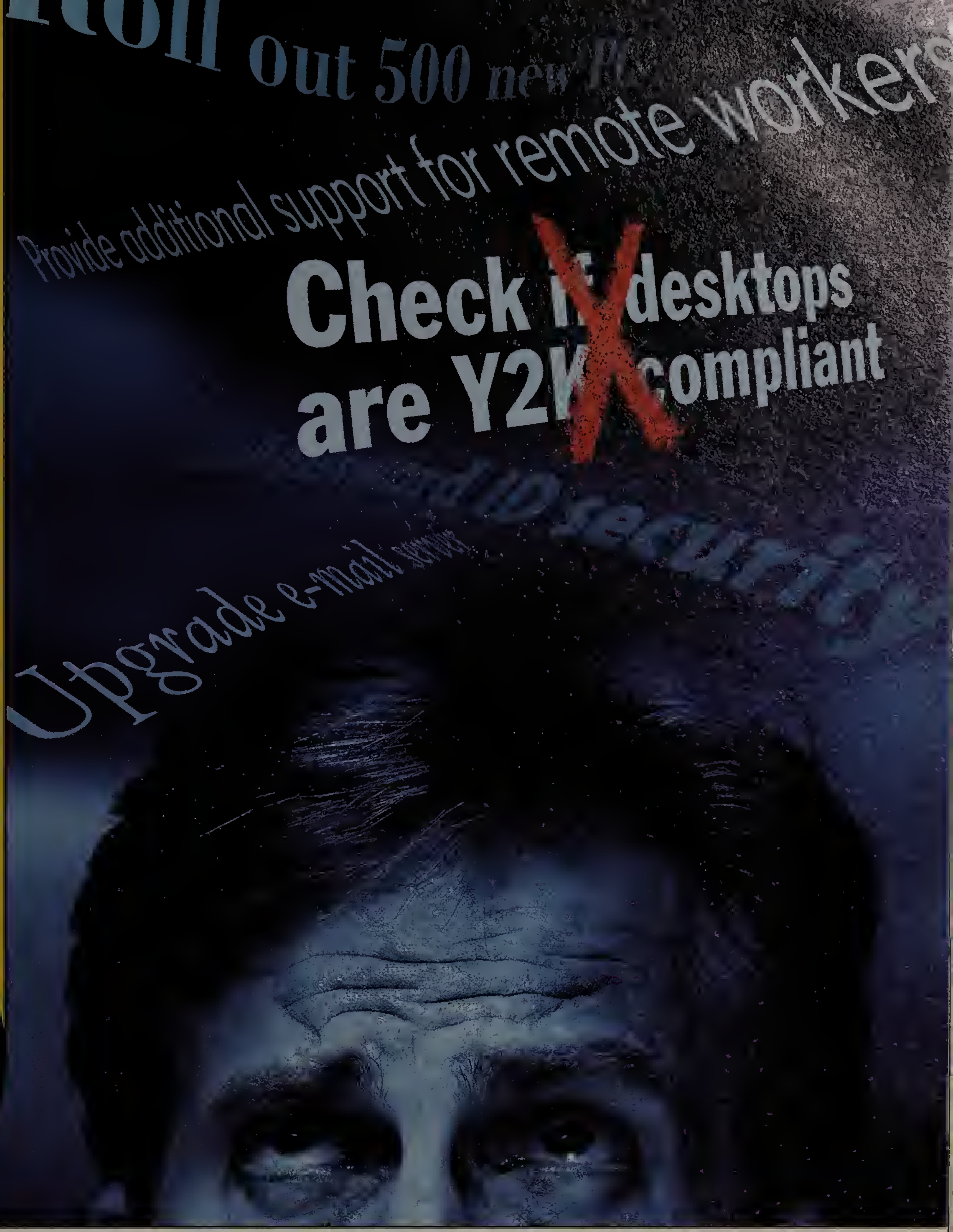
For the answer to this week's question and more net trivia, visit Network World Fusion and enter 2467 in the DocFinder box.

This week's question:

Linux vendor Pacific HiTech recently changed its name. What is the company's new name?

The Y2K bug also comes in a desktop version.

Fortunately, so does the solution.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Check if desktops are Y2K compliant
IP security
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IP strategy

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Desktop level Y2K anomalies are a serious problem—one that needs to be addressed before and after the year 2000. Even if your system has been deemed Y2K-compliant, it's crucial that you continue to monitor new files end-users receive from outside sources or you risk reintroducing errors into your entire system.

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Psion blazing a trail from handhelds to enterprise apps

BY JOHN COX

LONDON — A handheld computer pioneer now hopes to blaze a direct trail between these devices and existing corporate applications and databases.

Psion Enterprise Computing, a unit of Britain's Psion, PLC, this fall plans to release the netBook handheld PC, running the Epoc operating system.

The netBook will look a lot like computers running Microsoft's Windows CE: it will have a color backlit screen and an 84-character keyboard, and will weigh just under three pounds.

But what's not obvious may be what's most significant. Inside, the netBook will have software to run Java applications, and some new code from IBM to connect directly with enterprise applications via IBM's MQSeries messaging software.

MQSeries is widely used to let applications reliably and accurately exchange information over corporate nets.

By contrast, Win CE devices generally link to personal information management applications running on Windows PCs.

Microsoft does offer a connection to its Exchange Server, for e-mail and some scheduling functions. There are some similar third-party products and some others that can copy data between the handhelds and server databases. But creating direct data exchange with existing server-based applications is difficult.

MQSeries inside

The netBook will be the first device to run a microversion of MQSeries, called MQSeries Everywhere. This software, no more than 50K bytes of code, will let applications on the netBook connect to an MQSeries server software running on a Windows NT computer. So data captured on the netBook can be exchanged, via the MQSeries server, with an array of server applications that also use the MQSeries APIs: billing, credit check, inventory, accounting, scheduling and shipping.

With the Java Runtime Environment, a Java Virtual Machine and some Java classes, the netBook can tap into software being written by nearly two million Java developers worldwide.

Psion developed the 32-bit Epoc software and a line of successful handhelds years ago, marketing them mainly in Europe.

A few years ago, Psion spun Epoc off into a separate company, Symbian, which also is funded by Ericsson, Matsushita and Nokia.

By press time, Psion had not returned calls requesting an interview.

"The netBook basically provides the same types of features [as the Win CE machines]," says Frank Maddlone, an independent consultant who specializes in mobile technology. Maddlone recently posted an online review of the Psion netBook (at www.foxpop.indirect.co.uk/roadtesting/Jedi1.htm). "The main difference is the way in which Epoc provides those basic functions — more intuitively, with fewer stumbling blocks and procedural issues to contend with."

But Psion needs to make sure the netBook can tie in more smoothly to the Web and to e-mail, a weakness in its current products, Maddlone says.

"Windows CE machines gain much of their function through their connection to a Windows PC," says Mark Paulhus, a quality assurance technician with an air conditioning manufacturer. "Psion products can stand alone. That is the most important difference for me."

Psion: www.psion.com

More

breaking news

Network World Fusion now has more news than ever. Check out these stories online:

Microsoft goes after OEM market with embedded code:

Microsoft officially moved into the embedded operating system market with last week's release of Windows NT Embedded 4.0. **DocFinder: 4239**

Bus-Tech box gives cheaper IP access to IBM mainframes:

Bus-Tech next week will announce a device that can significantly simplify and reduce the cost of connecting mainframes to IP-based Ethernet LANs. The company's VCR-sized, $10,000 Mainframe Network Appliance can be used in place of IBM front-end processors or channel-attached Cisco routers to bridge the gap between IP backbones and mainframes, Bus-Tech claims.
DocFinder: 4237

Compaq introduces SAN bundles:

Compaq has rolled out three storage server bundles aimed at making it easier for midsize to large enterprise users to design and install Fibre Channel storage-area networks.
DocFinder: 4238

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NetFlash delivers network news to your e-mail inbox every day, free of charge. And it includes occasional flashes of wit. Sign up today, sit back, and let the news come to you.

DocFinder: 3850

NetworkWorld Fusion

www.nwfusion.com

Novell, AOL buddy up on instant messaging

BY CAROLYN DUFFY MARSAN

Novell will integrate America Online's popular Instant Messenger application into Novell Directory Services under an agreement announced last week.

Integrating the two products should help organizations whose end users are demanding the ability to communicate in real time with co-workers online. Many such users already communicate with their friends and family at home through services such as Instant Messenger.

Having a single directory service for the Novell network operating system, Groupwise e-mail and AOL instant messaging will streamline administration time and costs, Novell officials say. It also will allow administrators to set controls on instant messaging, in terms of who can see and chat with each other.

"With NDS, we can make sure that instant messaging is not something that spreads like wildfire, out of control in the corporate environment," says Samm DiStasio, director of product marketing for NDS. "NDS can provide the management for instant messaging in terms of how people find other people they are interested in, both inside a company and its business partners."

"Corporations want new applications to use general-purpose directories," explains Jamie Lewis, president of The Burton Group, a Midvale, Utah consulting firm. "The degree to which AOL does that with NDS will knock down at least one of the barriers that enterprise IT managers would have in deploying AOL Instant Messenger."

Novell officials declined to say when NDS would support Instant Messenger or how exactly the integration would occur. Instant Messenger is the only instant messaging client that Novell plans to support at this time; however, Novell officials did not rule out supporting other clients in the future. ◪

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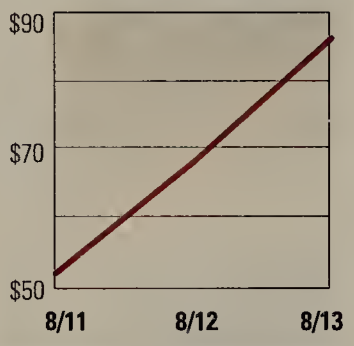
Torvalds outlines upcoming Linux features

BY IDG NEWS SERVICE STAFF

With his own popularity soaring and his operating system gathering strength, Linus Torvalds took the LinuxWorld stage last week and made one request: He wanted more battery life from his Sony Vaio notebook.

Red hot opening

Red Hat's stock shot up nearly 300% from its IPO price of $14 last Wednesday, and climbed steadily through the week's end.



In an upbeat keynote speech at the LinuxWorld conference, Torvalds, the creator of Linux, told a packed conference center what technical features will be included in Version 2.4 of the operating system's kernel, which he said will be pushed out the door by year-end.

Not surprisingly, power management is high on Torvalds' list of improvements. Better support for universal serial bus, which allows multiple peripherals to be connected to a computer without the need to reboot, along with plug-and-play capabilities, will also be in the next kernel.

Torvalds is also working on increased support for PC Cards — the credit card-size devices that slip into a notebook to add memory, storage and modem functions.

For servers and workstations, the new kernel will have better support for symmetric multiprocessing, Torvalds said. The current Linux kernel scales comfortably to four- or eight-processor systems. Version 2.4 will be "much better," he added, but didn't elaborate.

The only thing hotter than Torvalds' speech was Linux vendor Red Hat's initial public offering (IPO). The open source software vendor launched its IPO of six million shares of common stock last week and watched the share price triple over its offering price in early trading.

Shares opened at $46 and hit a morning peak of $50 — much higher than the offering price of $14 per share. Dow Jones estimated Red Hat's market value at $2.96 billion last Wednesday.

Open source software such as Linux is built by unpaid developers over the Internet, freely distributing and modifying the code. Red Hat has a 49% share of the Linux market, according to International Data Corp., a market research firm in Framingham, Mass.

Torvalds told LinuxWorld that Version 2.4 of the kernel will be ready by year-end.

Other LinuxWorld goings-on included:

- IBM announced it will port its Tivoli Enterprise systems management software to Linux. Tivoli will offer its Framework solutions, which include Tivoli Enterprise and Tivoli Management Suites, for Linux. The offerings will complement several other Tivoli applications already in the process of being ported to Linux, including Tivoli User Administration, Distributed Monitoring, Enterprise Console, Inventory and Software Distribution.

  IBM's Global Services group said it would offer a range of services for Linux users, ranging from consulting to technical assistance.
- Intel Chairman Andy Grove announced that the kernel of a version of Linux for Intel's forthcoming 64-bit architecture will be released to the open source community early next year. Grove said that Linux is up and running on a 64-bit simulator in Intel's labs, along with seven other operating systems.
- Lotus posted a "sneak preview" of Domino Release 5.0 for Linux on the Notes.Net Web site. The preview is available at notes.net/linux. The preview includes most of the standard Domino R5 services and runs on RedHat 6.0, Caldera 2.2, Caldera 2.3 beta, SuSE 6.1 and TurboLinux 2.X.
- Corel offered the first demonstration of its Linux operating system for desktop users. Called Corel Linux, the operating system will be available in a month as a standalone product costing less than $100, or bundled with the upcoming WordPerfect Office for Linux, which is expected in early 2000. ◪

Covad puts DSL to work in virtual networks

BY TIM GREENE

SANTA CLARA, CALIF. — Covad Communications next week will launch a digital subscriber line-based virtual private network service, giving corporate users a relatively inexpensive way to tie branch offices and telecommuters into the corporate backbone.

DSL-VPN Service is designed to boost access bandwidth while lowering monthly costs.

For example, telecommuters who keep a 128K bit/sec dial-up ISDN link to the corporate net up all day can run up bills of $500 per month or more. A DSL VPN link from Covad costs a flat $149 per month for 144K bit/sec, regardless of how much the link is used.

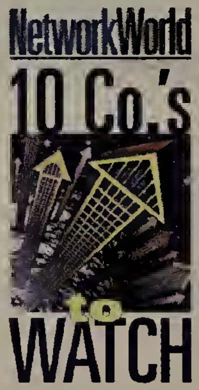
DSL-VPN Service uses a regular phone line with DSL gear at both ends to turn the wires into a high-bandwidth datastream. The DSL line can be connected to the Internet or to a private packet network that acts as the backbone for the VPN.

Covad plans to wholesale the service to ISPs, which will market it to end users. National ISP Concentric Network and DSLnetworks are among the first companies to market the service (*NW,* Aug. 9, page 25).

The ISPs will sell the VPN gear necessary to authenticate users and encrypt traffic as it crosses the VPN.

Alternatively, customers can buy just the access and backbone service and add their own VPN equipment, says Eric Moyer, a senior product marketing manager for Covad.

Covad, selected last January as one of *Network World's* 10 Companies to Watch for 1999, has two DSL VPN services, one for remote offices with many users and one for individual telecommuters.



The remote office option comes in three symmetric speeds: 144K bit/sec, 384K bit/sec and 1.1M bit/sec. If the DSL line connects to the Internet, the services cost $149, $199 and $399 per month, respectively.

If the line connects to Covad's or an ISP's private backbone, the services cost $175, $210 or $485 per month, respectively.

The prices are Covad estimates of what ISPs will charge their customers.

Customer site DSL equipment costs $300 to $600, depending on whether the customer opts for a bridge or a router. Installation of the line costs $325.

The telecommuter options are asymmetric, with download speeds higher than upload speeds. A download speed of 144K bit/sec costs $99 per month; 384K bit/sec costs $59 per month; and 768K bit/sec costs $79 per month.

For an additional monthly per-site fee, customers get access to the ISP's help desk, VPN client software and software management. The fee varies depending on speed, but the $59 basic service costs $115 per month with the upgrade.

The installation fee is $300 and includes customer site equipment, Moyer says.

Telecommuter rates are less than the remote office rates because they are based on Covad's consumer DSL service rather than its business service.

The asymmetric consumer service comes without service-level guarantees, uses a DSL bridge rather than a router and assigns only one IP address per site, Moyer says.

There is no option to connect telecommuters to a private IP backbone; customers must use the Internet as their VPN backbones. As part of the service, customers also get dial-up Internet access, so if they roam with their laptops, they can still connect to corporate VPNs.

As part of the service, corporations that buy DSL VPN for multiple telecommuters can use a Covad ordering and provisioning Web site.

This lets telecommuters use the site to enter their phone numbers and corporate codes and order the DSL line and equipment, saving the corporate IS manager the chore of coordinating multiple installations.

The Web site also offers remote users a tutorial on VPNs so they have a better understanding of how the network works.

Covad: www.covad.com

Not only is DSL supporting VPNs, it can also be used to carry voice. Page 36.

*Price shown refers to U.S. estima[illegible] for the Desktop 6400X/6[illegible]
bytes. †Deskpro PCs are warranted [illegible] YMARK 2000 hardware [illegible]
results may vary dependent on factors [illegible] not limited to: software
no other warranties, express or impl[illegible] the performance of hardw[illegible]
Complete details on Compaq's Year 2[illegible] can be found at www.co[illegible]
Operating system installed. Intel, the [illegible] and Pentium are reg[illegible]
and Deskpro are registered trade[illegible] Better answers is a service [illegible]

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Intel,

continued from page 1

routers.

The product launches, the first of which is expected around the time of NetWorld+ Interop '99 Atlanta, are intended to further Intel's efforts to grow its network business at twice the industry rate.

Intel is trying to leverage its presence at the desktop, says Esmeralda Silva, LAN analyst at International Data Corp. in Framingham, Mass. "The company has good brand-name recognition, which is really what it's all about in that small and midsize network market," she says.

Intel declined comment on the upcoming product launch.

In gigabit switching, Intel will face the toughest competition from Cisco, 3Com, Nortel Networks and Hewlett-Packard. These four companies account for 70% of the market, Silva says.

Intel's offering, which is code-named Brewster, will be a chassis-based switch supporting eight-port 1000Base-SX Gigabit Ethernet modules and 24-port, copper-based 10/100M bit/sec autosensing Ethernet modules. Sources say Brewster's maximum port capacity will be 32 gigabit and 96 10/100 Ethernet ports, and the switch will forward traffic at 47.5 million packet/sec.

The Intel documents indicate the Brewster line may by labeled the Intel 6000 series when it ships this fall. In addition to Layer 3 forwarding, early next year Brewster will gain Layer 4 traffic classification and link aggregation capabilities. The switch will feature redundant backplanes, fans, power supplies and central processing modules. The processor and power supplies will be hot-swappable, as will the media modules.

Pricing for Brewster could not be learned by press time, but Silva says it would have to be priced between $500 and $1,000 per Gigabit Ethernet port to be competitive.

The regional and branch office routers are called the 9500 and 8200. Configuration details on these devices were not in the Intel documents, but they did state that the products will support frame relay and X.25 data links, hardware-based wire-speed compression, and traffic shaping tools to improve the efficiency of WAN use. The routers also feature traffic logging tools and will ship with Intel DeviceView software for configuration and management.

The 9500 and 8200 will replace Intel's existing Express 8100 and 9000 branch and regional site routers, according to the documents.

The Express 8100 router has a single 10/100 Ethernet LAN port and a single WAN port — 128K bit/sec ISDN or 1.5M bit/sec T-1, frame relay or X.25. The Express 9000 routers have two WAN ports that support a total of 3M bit/sec. If just one port is used, it can support 2M bit/sec.

Intel's net splash

Intel plans to announce next month routers and a switch aimed at midsize enterprises.

Product name	Description
Brewster	Modular gigabit Layer 3 switch for enterprise data centers.
Intel Express 8200	Branch-office router with dedicated and ISDN dial-up WAN ports.
Intel Express 9500	Branch-office router with multiple dedicated WAN ports and ISDN dial backup.
Pt. Reyes	Central site router for aggregating traffic from remote offices.

The 9500 and 8200 routers are expected to ship early next month and be on display at the Atlanta Interop show.

The central site router due in October is code-named Pt. Reyes. The documents did not provide technical detail about this device, but it may be similar to Intel's ShivaIntegrator 500, a central site router currently sold overseas.

The ShivaIntegrator 500 is a three-slot chassis that supports Basic and Primary Rate Interface ISDN, frame relay, leased lines, X.25 and dial-up.

Pt. Reyes will ship in late October or early November, according to the documents.

In related news, Intel is planning the evolution of Shiva's LANRover VPN Gateway from a VPN box to an integrated access device that can handle voice and data. Products are still a year away, according to Michael Duffy, business unit manager of Intel's WAN Systems Operation.

Dave Kosiur, an analyst with The Burton Group, a technology evaluation firm in Midvale, Utah, says, "I think that direction makes sense. The trend I see among VPN manufacturers is putting one box at the edge of the enterprise that provides a number of services that you can turn on and off without replacing hardware."

Kosiur noted that the quality-of-service guarantees that would be necessary for voice and policy-based management are still developing, and it will likely be a year before they are ready to integrate with each other in standards-based products.

Intel is looking to build equipment that includes routing and bandwidth management. It will extend IP Security from the WAN to desktops using VPN-enabled network interface cards.

That architecture would support encryption of data not only between sites but within LANs as well. It would also make it possible to streamline policy management by centralizing all policies in a single database.

While the Shiva brand name will remain as "Shiva from Intel" for the next year, Intel is dreaming up a new name for the Shiva product line that will include the VPN gear, as well as the routers. ◪

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Ethernet,

continued from page 1

9.584640G bit/sec. The latter would match the OC-192 rate of SONET, a widely used carrier network technology, making it easier for service providers to adopt 10-Gigabit Ethernet.

Carriers are attracted to 10-Gigabit Ethernet for more than LAN transport services. Ethernet has proven itself as a simple and inexpensive way to build networks of various speeds. In fact, some carriers are already using Gigabit Ethernet in metropolitan-area networks (MAN).

As a result, Ethernet could be on the verge of becoming what ATM was supposed to be — a single technology that can stretch from the desktop to the campus backbone to the MAN and beyond. Possible enterprise benefits are less-expensive services and easier network management because the network could all be based on a single core technology.

"We're looking at the impact of native [Ethernet] interfaces and how we can efficiently transport Ethernet across our network," says Rama Nune, senior manager for optical and data nets at MCI WorldCom. The company is the only major service provider to openly discuss its research in this area, though industry sources say others are looking into it.

Ethernet still falls short of ATM and SONET in many respects. Critics point out that Ethernet doesn't have ATM's quality-of-service (QoS) guarantees, which are necessary for real-time traffic. Plus, Ethernet doesn't have the built-in management capabilities of SONET to help service providers track link problems.

But equipment vendors and service providers are looking at ways to overcome the shortcomings. Ethernet can get a degree of QoS through priority queuing, for instance.

Signs that Ethernet is invading the WAN

Some developments brought up in early discussions about 10-Gigabit Ethernet indicate the technology may be about to break out of the LAN in a big way:

- Service providers are asking for a distance of 40 km — but are allowing for distances of 1,000 km or more in long-haul applications.
- Service providers are asking for a data rate of 9.584640G bit/sec — to match the OC-192 rate of SONET.
- Ethernet-based gear costs one-fifth as much as comparable SONET gear.

And one possibility for beefing up WAN management is to create a "digital wrapper" around Ethernet frames for long-haul traffic, says Joe Skorupa, director of switching and routing at Ryan Hankin Kent, a market research firm in South San Francisco. "When you're going across the country, you've got a complex cable plant in the middle and you need some visibility into the operation of the network," he says. "Plain vanilla Ethernet framing doesn't give that to you."

"The key question is whether we can offer maintainable services," MCI WorldCom's Nune says. Error statistics, failure conditions and other information are vital to figuring out what service-level agreements the provider can offer and how they can be enforced, he says.

The main reason Ethernet is being considered for the WAN is the low cost. Ethernet gear costs one-fifth the price of its SONET counterparts, says Dan Dove, principal engineer of LAN physical-layer technologies at Hewlett-Packard.

So why wasn't Ethernet considered for WAN transport before now? "ATM was much more viable when Gigabit Ethernet was being developed," says Bob Grow, an engineering fellow at Intel who has participated in the standards process for Gigabit and 10-Gigabit Ethernet. The conventional wisdom several years ago was that ATM would form the backbone for most corporate networks, creating links to ATM beyond the campus, he says. However, Gigabit Ethernet is becoming the preferred choice for many corporate backbones.

Technically, the standards work on 10-Gigabit Ethernet hasn't really begun. The IEEE study group is still trying to decide on objectives, such as what speed to endorse. This concerns Michael Bennett, a network engineer at Lawrence Berkeley National Laboratory, who would like to get his hands on 10-Gigabit Ethernet gear and doesn't care much about carrier use of the technology.

"Until that [speed] issue gets resolved, I'm afraid it's going to delay the whole process," he says. The IEEE study group hopes to submit a project authorization request for 10-Gigabit Ethernet by year-end. ◪

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1. What is the principal business activity at your location?

(check ONE only)

01. ☐ Manufacturing (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities/Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
10. ☐ Education
11. ☐ Government
12. ☐ Military
13. ☐ Aerospace
14. ☐ Consulting (Independent) *
15. ☐ Carriers/Service Providers
16. ☐ Internet Service Provider (ISP)
17. ☐ Manufacturing (Computer/Communications/OEM)
18. ☐ Resellers of Computer/Network Products (VARs,VADs)*
19. ☐ Systems/Network Integrators*
20. ☐ Distributors (Computer/Communications)*
21. ☐ Other (please specify) ______________

*Attn Consultants, Integrators, Distributors, Resellers: Please complete entire form based on ALL clients and your own business needs

2. P: What is your primary job function? (check ONE only) S: What is your secondary job function? (check ALL that apply)

P S

- ☐ 1. ☐ Network Management
- ☐ 2. ☐ LAN Management
- ☐ 3. ☐ Datacom/Telecom Management
- ☐ 4. ☐ IS/IT/MIS/CIO/CTO/Systems Management
- ☐ 5. ☐ Internet/Intranet/E-Commerce Mgmt, Webmaster
- ☐ 6. ☐ Engineering Management
- ☐ 7. ☐ Corporate Management (CEO, COO, CFO, Pres., VP, Dir., Mgr.)
- ☐ 8. ☐ Consultant (Independent)
- ☐ 9. ☐ Other (please specify) ______________

3. What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of?

(Please print the appropriate number code on the line next to each product category. Please complete ALL categories A–N.)

1. $100 Million or more
2. $50 Million to $99.9 Million
3. $25 Million to $49.9 Million
4. $10 Million to $24.9 Million
5. $1 Million to $9.9 Million
6. $100,000 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A ____ Large Systems *(Mainframes/Minis)*
B ____ Desktops *(Micros/Laptops/Workstations/PDAs)*
C ____ Servers
D ____ LANs
E ____ WAN Equipment
F ____ Carrier Services
G ____ Internetworking
H ____ Internet
I ____ Intranet E-Commerce
J ____ Extranet/Ecommerce
K ____ Remote Access
L ____ Peripherals *(including storage)*
M ____ Software
N ____ Service/Support

4. What is the total number of sites for which you have purchase influence?

(check ONE only)

1. ☐ 100+ 2. ☐ 50 – 99 3. ☐ 20 – 49 4. ☐ 10 – 19 5. ☐ 2 – 9 6. ☐ 1 7. ☐ None

5. What is the total number of Servers/Clients/LANs installed/planned at your location/ in your entire organization?

(check ONE box in each column)

SERVERS At Location A		SERVERS Entire Org. B	CLIENTS At Location C		CLIENTS Entire Org. D	LANS At Location E		LANS Entire Org. F
☐	1. 50,000+	☐	☐	1. 50,000+	☐	☐	1. 50,000+	☐
☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐
☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐
☐	4. 100 to 999	☐	☐	4. 100 to 999	☐	☐	4. 100 to 999	☐
☐	5. 50 to 99	☐	☐	5. 50 to 99	☐	☐	5. 50 to 99	☐
☐	6. 10 to 49	☐	☐	6. 10 to 49	☐	☐	6. 10 to 49	☐
☐	7. 1 to 9	☐	☐	7. 1 to 9	☐	☐	7. 1 to 9	☐
☐	8. none	☐	☐	8. none	☐	☐	8. none	☐

6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check ONE only)

CORPORATE:

1. ☐ Entire Enterprise/Multiple Enterprises
2. ☐ Division/Multiple Divisions
3. ☐ Department
4. ☐ None

B. Involvement (check ALL that apply)

1. ☐ Create Network/IT Strategy
2. ☐ Recommend/Specify Brand
3. ☐ Approve Purchase
4. ☐ Evaluate Products/Services
5. ☐ Determine the Need
6. ☐ None

7. What is the estimated number of employees at your location/in entire organization?

(check ONE in each section)

A. At your location:

1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 250 – 499
8. ☐ 100 – 249
9. ☐ 99 or less

B. Entire organization:

1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 499 or less

8. Please indicate the Internet/Intranet/LAN/WAN products/services that you are currently involved in purchasing or plan to purchase (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

INTERNET/INTRANET

A B

- ☐ 01. ☐ VPN Equipment
- ☐ 02. ☐ VPN Services
- ☐ 03. ☐ Firewalls/Security/Encryption
- ☐ 04. ☐ Electronic Commerce
- ☐ 05. ☐ Web Servers/Software
- ☐ 06. ☐ Web Enabled Call Center Tools
- ☐ 07. ☐ Voice/Video Over IP (IP Multicast Routing)
- ☐ 08. ☐ Internet Services
- ☐ 09. ☐ Web Hosting
- ☐ 10. ☐ Host Access
- ☐ 11. ☐ Web Development Tools
- ☐ 12. ☐ Management/Monitoring Software
- ☐ 13. ☐ Web Based Management Tools
- ☐ 14. ☐ Web Based Collaboration/Groupware
- ☐ 15. ☐ Caching/Load Balancing Products
- ☐ 16. ☐ Other Internet/Intranet

LOCAL-AREA NETWORKS/INTERNETWORKING

A B

- ☐ 17. ☐ Local-Area Networks
- ☐ 18. ☐ Network Operating System Software (NOS)
- ☐ 19. ☐ Intel Based Servers
- ☐ 20. ☐ Intel Based Multiprocessor Servers
- ☐ 21. ☐ RISC Based Servers
- ☐ 22. ☐ Clustered Servers
- ☐ 23. ☐ Print Servers
- ☐ 24. ☐ Routers
- ☐ 25. ☐ Layer 2 Switches
- ☐ 26. ☐ Layer 3 Switches
- ☐ 27. ☐ Layer 4 Switches
- ☐ 28. ☐ ATM Switches
- ☐ 29. ☐ Token-Ring Switches
- ☐ 30. ☐ Network Storage (NAS, SANs)
- ☐ 31. ☐ Storage/Backup (Optical, Disk, Tape, RAID)
- ☐ 32. ☐ Network Test/Diagnostic Tools
- ☐ 33. ☐ UPS
- ☐ 34. ☐ Network Interface Cards (NICs,PCMCIA)
- ☐ 35. ☐ Hubs/Intelligent Hubs/Stackable Hubs
- ☐ 36. ☐ Cables,Connectors, Baluns
- ☐ 37. ☐ SNMP Platform
- ☐ 38. ☐ Management Frameworks
- ☐ 39. ☐ Other LAN/Internetworking

WAN EQUIPMENT & SERVICES

A B

- ☐ 40. ☐ Modems
- ☐ 41. ☐ Cable Modems
- ☐ 42. ☐ Asynchronous Transfer Mode (ATM)
- ☐ 43. ☐ Frame Relay Equipment Including FRADS
- ☐ 44. ☐ Frame Relay Services
- ☐ 45. ☐ Remote Access Products
- ☐ 46. ☐ Remote Access Services
- ☐ 47. ☐ Wireless Data Equipment/Services
- ☐ 48. ☐ ISDN Equipment/Services
- ☐ 49. ☐ FT-1/T-1/T-3 Services
- ☐ 50. ☐ xDSL Services/Products
- ☐ 51. ☐ Diagnostic/Test Equipment
- ☐ 52. ☐ DSU/CSU
- ☐ 53. ☐ PBXs
- ☐ 54. ☐ Videoconferencing
- ☐ 55. ☐ Managed LAN/Router Services
- ☐ 56. ☐ Fax Servers/Services
- ☐ 57. ☐ Other WAN Equipment/Services

None of the above (1 - 57) A ☐ 58. B ☐

9. Please indicate the Network hardware/software/services that you are currently involved in purchasing or plan to purchase: (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

COMPUTERS/PERIPHERALS

A B

- ☐ 01. ☐ Laptops/Notebooks/PDAs
- ☐ 02. ☐ PCs
- ☐ 03. ☐ Windows Terminals/Thin Clients
- ☐ 04. ☐ Workstations
- ☐ 05. ☐ Storage/Backup (Optical,Disk,Tape,RAID)
- ☐ 06. ☐ Printers
- ☐ 07. ☐ Printer/Fax/Copier Hybrids (Multifunction Printers)
- ☐ 08. ☐ Minis
- ☐ 09. ☐ Mainframes
- ☐ 10. ☐ Fax/Modem Boards
- ☐ 11. ☐ Memory/Chips/Boards/Cards
- ☐ 12. ☐ Other Computers/Peripherals

SOFTWARE/APPLICATIONS

A B

- ☐ 13. ☐ Network Management
- ☐ 14. ☐ Systems Management
- ☐ 15. ☐ Security
- ☐ 16. ☐ Directory Services
- ☐ 17. ☐ Operating Systems
- ☐ 18. ☐ Applications Development Tools
- ☐ 19. ☐ Database Management/RDBMS
- ☐ 20. ☐ Groupware
- ☐ 21. ☐ E-Mail
- ☐ 22. ☐ Enterprise Resource Planning (ERP)
- ☐ 23. ☐ EDI
- ☐ 24. ☐ Desktop Videoconferencing
- ☐ 25. ☐ Imaging
- ☐ 26. ☐ Middleware/Serverware
- ☐ 27. ☐ Document Management
- ☐ 28. ☐ Site Metering Tools
- ☐ 29. ☐ Data Warehousing
- ☐ 30. ☐ Anti Virus Software
- ☐ 31. ☐ Multimedia
- ☐ 32. ☐ Y2K Conversion Software
- ☐ 33. ☐ Helpdesk
- ☐ 34. ☐ Other Software/Applications

SERVICES

A B

- ☐ 35. ☐ BPO (Business Process Outsourcing incl. Financial Services, HR, Logistics etc.)
- ☐ 36. ☐ Applications Outsourcing
- ☐ 37. ☐ Call Center Outsourcing
- ☐ 38. ☐ Systems Integration/Consulting
- ☐ 39. ☐ Education/Training Services
- ☐ 40. ☐ Other Services

None of the above (1 - 40) A ☐ 41. B ☐

10. Please indicate the platforms that are currently installed/planned: (check ALL that apply)

A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS

A B

- ☐ 01. ☐ TCP/IP
- ☐ 02. ☐ IPv6
- ☐ 03. ☐ SNA
- ☐ 04. ☐ Novell IPX/SPX
- ☐ 05. ☐ APPC/APPN/LU 6.2
- ☐ 06. ☐ NETBIOS/NETBUEI
- ☐ 07. ☐ NFS
- ☐ 08. ☐ SNMP
- ☐ 09. ☐ Other Network Protocols

LAN/WAN ENVIRONMENT

A B

- ☐ 10. ☐ Gigabit Ethernet
- ☐ 11. ☐ Switched Ethernet
- ☐ 12. ☐ Fast Ethernet
- ☐ 13. ☐ Ethernet
- ☐ 14. ☐ ATM
- ☐ 15. ☐ Token Ring/Token Ring Switching
- ☐ 16. ☐ IP Switching
- ☐ 17. ☐ Layer 3,4 Switching
- ☐ 18. ☐ FDDI
- ☐ 19. ☐ 100Base-T
- ☐ 20. ☐ 10Base-T
- ☐ 21. ☐ Fibre Channel
- ☐ 22. ☐ Wireless
- ☐ 23. ☐ DSL
- ☐ 24. ☐ ISDN
- ☐ 25. ☐ Frame Relay
- ☐ 26. ☐ Private Line T1, T3, FT-1, SONET
- ☐ 27. ☐ Other LAN/WAN Environment

NETWORK OPERATING SYSTEM

A B

- ☐ 28. ☐ Windows NT/Windows 2000
- ☐ 29. ☐ Novell (NetWare 5.X)
- ☐ 30. ☐ Novell (NetWare 4.X)
- ☐ 31. ☐ Novell (NetWare 2.X,3.X)
- ☐ 32. ☐ LINUX
- ☐ 33. ☐ Microsoft (LAN Manager)
- ☐ 34. ☐ Banyan (Vines)
- ☐ 35. ☐ IBM (LAN Server)
- ☐ 36. ☐ Other Network Operating System

COMPUTER OPERATING SYSTEM

A B

- ☐ 37. ☐ NT Workstation
- ☐ 38. ☐ Windows 2000
- ☐ 39. ☐ Windows 98/95/3.1
- ☐ 40. ☐ Intel based UNIX
- ☐ 41. ☐ RISC based UNIX (incl. SOLARIS)
- ☐ 42. ☐ LINUX
- ☐ 43. ☐ DOS
- ☐ 44. ☐ OS/2,OS/2 WARP
- ☐ 45. ☐ OS/400
- ☐ 46. ☐ IBM MVS/VM/VSE/ESA
- ☐ 47. ☐ Digital VMS
- ☐ 48. ☐ Macintosh
- ☐ 49. ☐ Other Computer Operating System

None of the above (1- 49) A ☐ 50. B ☐

11. Which of the following hardware platforms are installed/planned in your company?

(check ALL that apply)

A - Mainframes (Large Scale)

1. ☐ IBM
2. ☐ Other

B - Minis (Midrange)

1. ☐ IBM RS/6000
2. ☐ IBM AS/400
3. ☐ Digital/Tandem/Compaq
4. ☐ Unisys
5. ☐ H-P
6. ☐ Other

C - Workstations

1. ☐ Sun Microsystems
2. ☐ H-P
3. ☐ Digital/Compaq
4. ☐ IBM
5. ☐ Silicon Graphics
6. ☐ Other

12. What is the estimated gross revenue of your entire company/institution?

(check ONE only)

1. ☐ $20 Billion or More
2. ☐ $10 Billion to $19.9 Billion
3. ☐ $1 Billion to $9.9 Billion
4. ☐ $500 Million to $999.9 Million
5. ☐ $100 Million to $499.9 Million
6. ☐ $50 Million to $99.9 Million
7. ☐ $10 Million to $49.9 Million
8. ☐ $5 Million to $9.9 Million
9. ☐ $4.9 Million or less
10. ☐ None of the above

13. For which areas outside of the US do you have purchase influence?

(check ALL that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ Africa
7. ☐ Canada
8. ☐ None

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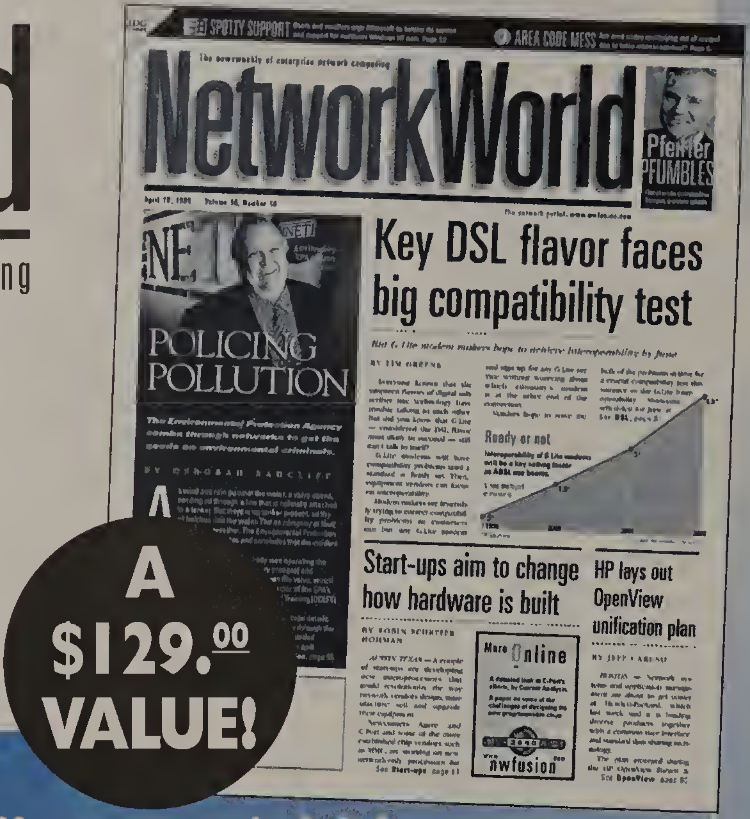

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Briefs

Wall Data in Kirkland, Wash., recently announced the rollout of Version 3.0 of its Rumba 2000 Web-to-host product. Among the new features in Version 3.0 is support for AS/400 5250 sessions, a 300K-byte lightweight ActiveX client, and API support for legacy 16-bit and 32-bit applications written in HLAPPI format. Rumba sits on a Web server and can establish sessions between browser-based PC clients and IBM mainframe and AS/400 hosts. Rumba 2000 also supports sessions with Unix and Digital VAX systems. The product costs $150 per seat.

Wall Data: www.walldata.com

Perle Systems is promising to add virtual private network (VPN) features to its 594 series of network controllers for IBM AS/400 servers early next year. The new software for the 594e and 594T will let remote users connect to AS/400 servers via the Internet or another IP network.

There are two VPN software upgrades to the 594 controllers. The first adds IP Security VPN authentication and encryption, as well as routing, and costs $1,200. The second includes the VPN software and adds proxy boot server software for $1,800.

Perle: www.perle.com

Hewlett-Packard has unveiled a line of test and analysis products for IP telephony. Telegra D and Telegra M testers let users analyze failed calls to isolate and troubleshoot the causes of quality-of-service degradation and connectivity problems. The systems can be located at remote sites and accessed remotely via a LAN or modem. Telegra D starts at $6,995, while Telegra M starts at $24,995. Software for the systems costs $495.

Both products are available now.

HP: www.hp.com

EMC/DG merger: The perfect match?

BY DENI CONNOR

HOPKINTON, MASS. — EMC swallowed an ailing Data General last week in a move that many analysts say will net the high-end network storage vendor a strong entry into the midrange storage market.

The $952 million acquisition gives EMC access to DG's Clariion division, which makes midrange RAID and SCSI storage systems that complement EMC's high-end products. The deal also gives EMC access to DG's Non-Uniform Memory Access (NUMA) clustering technology, which EMC will try to incorporate into larger systems.

"Synergistically, the acquisition makes a lot of sense," says George Elling, an analyst at Lehman Brothers in New York. "EMC's strength is in the high-end storage business and DG's is in the midrange. EMC can really leverage its strengths to help DG."

EMC and DG present a near-perfect range

There is very little overlap in the companies' products for the midrange to high-end storage markets.

EMC's high-end storage products

Symmetrix storage product family

DG's midrange storage products

Clariion storage product family

Product	Storage capacity
Symmetrix 3000	9.2 terabytes
Symmetrix 5000	9.2 terabytes
Clariion 1000-3000 SCSI series	178 to 356G bytes
Clariion 3000 Fibre Channel series	534G bytes
Clariion FC 5000-5500 series	Up to 182G bytes
Clariion FC 5600-5700 series	Up to 1.8 terabytes
Clariion SANbackup	Up to 540G bytes

What's in the future?

Less clear is EMC's long-term intentions for DG's Aviion server division, which accounted for 45% of DG's $1.5 billion in 1998 revenue. Aviion Windows NT and Unix servers compete with products from Compaq, Hewlett-Packard and Dell. DG posted a loss of $154 million last year.

EMC last month reported second-quarter revenue of $1.29 billion, up 36% compared to the same quarter last year, and net income of $289 million, up 52% compared to last year. The company is the leading supplier of enterprise storage systems, which make it possible to centrally manage storage for different types of networked computing environments.

Besides strengthening EMC's product portfolio, the deal is also seen as a way for the company to change the market's perception that EMC peddles propri-

See **EMC**, page 24

Broadcom unveils chips for QoS-enabled switches

StrataSwitch device will breed Layer 3, Layer 4 stackables at less than $70 per port.

BY JIM DUFFY

IRVINE, CALIF. — Users should see Layer 3 switches on the market next year costing less than $70 per port.

Sound laughable? Not to chip maker Broadcom, which this week is announcing a multilayer switch-on-a-chip that will bring Layer 3 and Layer 4 quality-of-service (QoS) and voice/data convergence capabilities to stackable workgroup switches.

Currently, low-cost Ethernet switches are predominantly Layer 2 forwarding engines with limited QoS features, such as 802.1p and 802.1Q support for priority and virtual LAN membership, and Internet Group Management Protocol snooping for multicast grouping.

The current switches typically cost around $100 per port for 10/100M bit/sec Ethernet.

But Broadcom's StrataSwitch chipset will let vendors deliver stackable switches that can read Layer 3 address and Layer 4 port and socket information at a price of $50 to $70 per 10/100 port, according to Broadcom.

Layer 3- and Layer 4-aware devices are usually routers or routing switches that cost hundreds of dollars — some just under $1,000 — per port.

Prices dropping

Broadcom plans to release StrataSwitch in volume in the fourth quarter. The move means that Broadcom customers, such as Cabletron, Cisco, Nortel Networks and 3Com, should be unveiling Layer 3- and Layer 4-aware stackable and workgroup switches next year at roughly half the cost of current offerings.

"The switch price is where we were forecasting it to go," says Esmeralda Silva, LAN analyst at International Data

See **Broadcom**, page 21

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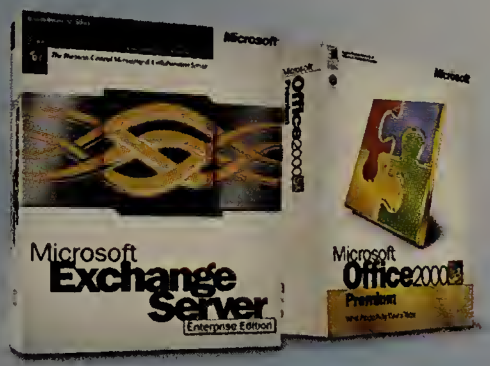

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IBM and 3Com partnership has deep roots

Companies' $1.3 billion patent sharing is the latest chapter in a decade-long saga.

BY MARC SONGINI

IBM and 3Com's recent agreement to share patents doesn't add up to a revolution in networking, but it will probably give each vendor a slight advantage in their respective markets, observers say.

Last week, IBM and 3Com announced that they would cross-license patents, with the goal of speeding network and other gear to market. While the companies have been collaborating on specific projects for many years, the new deal is much broader and free-wheeling in scope.

Billion-dollar trade

Sources close to the deal say it represents about $1.3 billion in trade between the companies. Because IBM has far more patents than 3Com — some 9,000 awarded in the past five years alone — it stands to reason that IBM will reap the lion's share of that cash.

"Such cooperation among competitors is the nature of the network business today."

Jane Munn, executive, IBM's NHD

While neither company will identify exactly what patents are in play, the agreement covers switch, network interface card (NIC) and modem technologies. 3Com may want access to IBM's server access and load balancing, Web caching, network management and virtual private network technologies. For its part, 3Com has a variety of patents covering things such as NICs, handheld devices and LAN switching technologies.

It is likely that IBM will go after 3Com's Ethernet switching technology, while 3Com may get mainframe-level server access technology, says Cindy Borovick, a research manager with International Data Corp., a Framingham, Mass., market research firm. 3Com may also be interested in some IBM legacy technologies, such as Advanced Peer-to-Peer Networking.

Competitors charging

Both companies have been taking a drubbing recently from aggressive competitors such as Cisco. Faced with dwindling market share in networking, IBM especially has been struggling to reinvent itself as an Ethernet and IP vendor. Access to 3Com's switching technology may give customers greater confidence in IBM's new Ethernet role, Borovick suggests.

Of the dozen or so partnerships IBM's Networking Hardware Division (NHD) has had in recent years, those with 3Com and Xylan have perhaps been the most profitable. The 3Com alliance has probably been the longest-lasting. The two companies have been partners, in effect, since the early 1990s when 3Com bought ChipCom, which was working with IBM to develop the 8260 hub. The relationship continued after 3Com stepped in.

Although IBM lately has been making much of its own network gear, it still uses 3Com to fill out its Ethernet LAN switch product line, reselling a 3Com device as its 8271 Ethernet switch. And while IBM makes it own Ethernet NICs, it freely provides 3Com NICs to customers who want them, says Jane Munn, an NHD executive.

"We've had a multifaceted relationship," Munn says.

Although 3Com is to some degree a competitor of IBM's, Munn says it is the "nature of the network business today" to partner with one's rivals. ◪

NetPro keeps watch over Active Directory

Directory Analyzer keeps directory infrastructure in check, monitors and synchronizes DNS.

BY JOHN FONTANA

The wake forming behind Microsoft's Active Directory continues to collect utilities designed to help IT executives deal with the complex, soon-to-be-delivered software.

It's no secret that Active Directory is poised to launch some enterprises into uncharted waters. Even Microsoft is recognizing that fact and trying to soften the plunge by fine tuning the software as the company races to release Windows 2000 by year-end.

This week, third-party vendor NetPro Computing is expected to ship Directory Analyzer, a product that monitors and manages directory infrastructures. While a host of tools have popped up to help pilot Active Directory and migrate from NT 4.0 domains, NetPro is one of the first vendors to offer diagnostic support once the directory is in place. The product comes from good stock — NetPro markets a similar tool for Novell Directory Services (NDS).

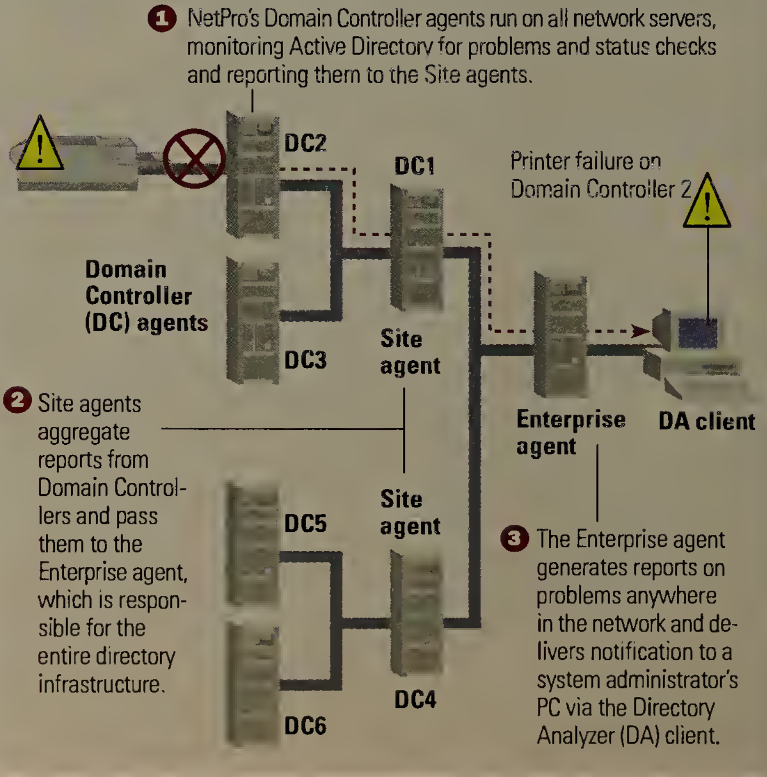
"This tool is great for tracking problems," says Daren Dugan, network analyst for the University of North Texas in Denton. "We had communication problems on our network with directory synchronization, and we were able to monitor those. It wasn't that we couldn't find [the problems] with a simple trace, but the benefit was being able to do it from a central console where you can do multiple machines at one time."

Dugan used the NDS version of the tool, but believes anyone moving to Active Directory is sure to benefit.

Directory Analyzer for Active Directory monitors the structural components of the directory infrastructure. One important feature is monitoring and synchronizing Active Directory's Domain Name Service (DNS), which is replacing Windows Internet Naming Service for networking computers. Inconsistent DNS information across a directory infrastructure can bring traffic to a halt. Directory Analyzer also monitors replication functions, Lightweight Directory Access Protocol calls and response times.

Secret agents

Directory Analyzer, NetPro's management suite, will let users aggregate directory information to help analyze network health.



DC2
DC1
Printer failure on Domain Controller 2
Domain Controller (DC) agents
DC3
Site agent
Enterprise agent
DA client
DC5
Site agent
DC4
DC6

❶ NetPro's Domain Controller agents run on all network servers, monitoring Active Directory for problems and status checks and reporting them to the Site agents.

❷ Site agents aggregate reports from Domain Controllers and pass them to the Enterprise agent, which is responsible for the entire directory infrastructure.

❸ The Enterprise agent generates reports on problems anywhere in the network and delivers notification to a system administrator's PC via the Directory Analyzer (DA) client.

Directory Analyzer uses different agents to watch over Domain Controllers and subnets (see graphic). The agents run troubleshooting tests, report on possible causes of problems and recommend steps for repair.

"The things that can go wrong with Active Directory are arcane since IT doesn't have experience with this directory," says Kent Purdy, director of product management at NetPro. "There will be a learning curve because Active Directory is a whole new animal."

As proof that the animal will need further care and feeding, NetPro already is working on the next version of Directory Analyzer, which will feature its administrative console as a snap-in for Microsoft's Management Console.

Directory Analyzer costs $14 per registered Active Directory user.

NetPro: www.netpro.com/directoryanalyzer

Broadcom,
continued from page 17

Corp. in Framingham, Mass. "The only way switch prices could get there is by doing more integration. This is for a full-featured switch that allows you to start to build a nice QoS network at the right price."

"With the price drops we've seen in 10/100, I think Broadcom might be right in" the $50 to $70 per-port range, says Mike McConnell, an analyst at Infonetics Research in San Jose.

A trend at work

Broadcom is not alone. Competitors such as MMC Networks and Maker Communications are spinning network processors that integrate more and more multiservice features.

This trend is helping to drive switch prices down for end users because they need less hardware or software to get the features they need.

> ***"With the price drops we've seen in 10/100, I think Broadcom might be right in [the $50 to $70 per-port range]."***
>
> Mike McConnell, analyst,
> Infonetics Research

MMC, for example, in June unveiled Fast Ethernet and Gigabit Ethernet chipsets that incorporate packet classification capabilities for policy-based networking.

Ostensibly, the devices will enable workgroup and enterprise backbone switches to look deep enough into packets to glean data that is vital for enforcing security and QoS policies.

StrataSwitch essentially works the same way. Broadcom's Content-Aware packet classification technology can examine any information field within the first 64 bytes of each packet to determine the traffic type. Once classified, a packet is assigned a specific class and is forwarded according to information found within the packet header.

More features

Each StrataSwitch port has four traffic queues to differentiate classes of traffic and prioritize handling based on network policy.

StrataSwitch chipsets will allow manufacturers to build nonblocking switches that support 24 Fast Ethernet ports and two Gigabit Ethernet uplinks.

Network administrators will be able to manage a stack of up to 32 StrataSwitch-based switches as one logical entity, Broadcom says.

StrataSwitch delivers 9G bit/sec of internal bandwidth and more than 6.6 million packet/sec of filtering capacity whether operating at Layer 2 forwarding, Layer 3 switching or Layer 4 classification, the company says.

Popular switch features, such as link aggregation or trunking, port mirroring, IEEE 802.3X flow control and per-port Remote Monitoring registers, are also built in to the silicon.

The device is priced at less than $100 in volume quantities.

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EMC,

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etary products. The company's Fibre-Alliance has been widely criticized as a proprietary measure to ensure that other vendors' Fibre Channel equipment works with EMC storage. Adding the Clariion storage equipment to the mix is seen as opening up the EMC architecture.

Product synergy

In many ways, the acquisition is a boon for both companies. There is very little product overlap. DG's storage subsystems give EMC a broad span of Fibre Channel RAID and SCSI-based storage products. They also fit well with EMC's Symmetrix storage arrays for mainframe, Unix and Windows NT environments, says Dave Hill, an analyst at Aberdeen Group in Boston. DG's storage products, which range from 18G bytes to 2 terabytes in size, are pint-sized compared to EMC's storage products, which handle from 72G bytes up to 9.2 terabytes of data.

Although there is some product overlap in midsize Windows NT and Unix networks, the products are differentiated by function. DG's Navisphere for Unix and NT is designed for installing, monitoring, configuring and managing the physical characteristics of multiple Clariion Fibre Channel and SCSI storage arrays. EMC's products, on the other hand, are targeted at specific tasks, such as duplicating data, providing dual active volumes for processing and moving large amounts of data from one location to another.

With the exception of Clariion's Remote Mirroring Software, which allows data to be duplicated to local or remote NT or Unix sites, DG relies on third-party products to provide these functions.

An EMC spokesperson estimated that some EMC products, such as its volume replication TimeFinder utility and the Symmetrix Remote Data Facility mirroring product, will be made available on Clariion devices. EMC will continue to use the Clariion brand name for these software and hardware products.

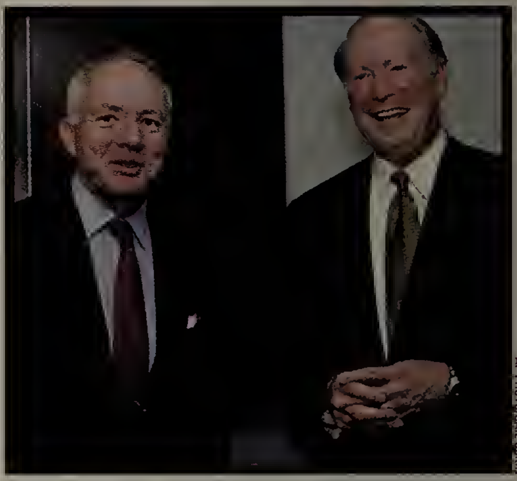
An odd couple

While there is a lot of synchronicity in the company's hardware and software products, there are questions as to how EMC will integrate its service offerings with DG's products and whether there is any benefit in gaining control of the Aviion server line.

According to analysts, EMC's services model, although comprehensive, is pricey. Whether EMC will be able to move its all-inclusive model to the midrange market, which is unaccustomed to handholding and 24-7 monitoring, is questionable, Aberdeen's Hill says. But David Donatelli, EMC's vice president of new business development, insists that customers have been asking for lower-end services.

DG's Aviion server line also presents a quandary for EMC, which sells nothing but storage systems. It is uncertain whether the company will try to use the servers to take advantage of storage sales in the midrange market, as its competitors Compaq, Dell and Sun do, or if it will simply focus on using NUMA technology to make large storage clusters.

NUMA is a symmetrical multiprocessing architecture that is useful in the creation of large clusters — 250 or more servers and storage subsystems — exceeding the size of clusters that rely on message-passing architectures, such as Microsoft Cluster Server.



AP PHOTO/GAIL OSKIN

Ronald Skates (left), president and CEO of Data General, and Michael Ruettgers, president and CEO of EMC, celebrate a storage marriage.

Mark Kelleher of SunTrust Equitable Securities in Boston echoes analysts on this issue.

"Although the company really does not want to be in the server market, it gains NUMA technology, which has clustering capabilities that can be transferred from servers to storage," he says. As part of the acquisition, EMC must hold on to the Aviion division for at least two years.

"That is, of course, EMC's goal — to place intelligence down in the storage subsystem and make servers a commodity. They are going to need that type of technology to make large storage-area networks," Kelleher says.

While EMC's Donatelli says the company is particularly interested in NUMA, he notes that a number of Fortune 2000 customers ask for server options, too. The acquisition will let EMC take advantage of DG's investment and research in Intel processors, and sell servers to midrange storage customers that want to purchase from a single vendor, he says.

DG's Aviion server business will operate as a separate unit of EMC.

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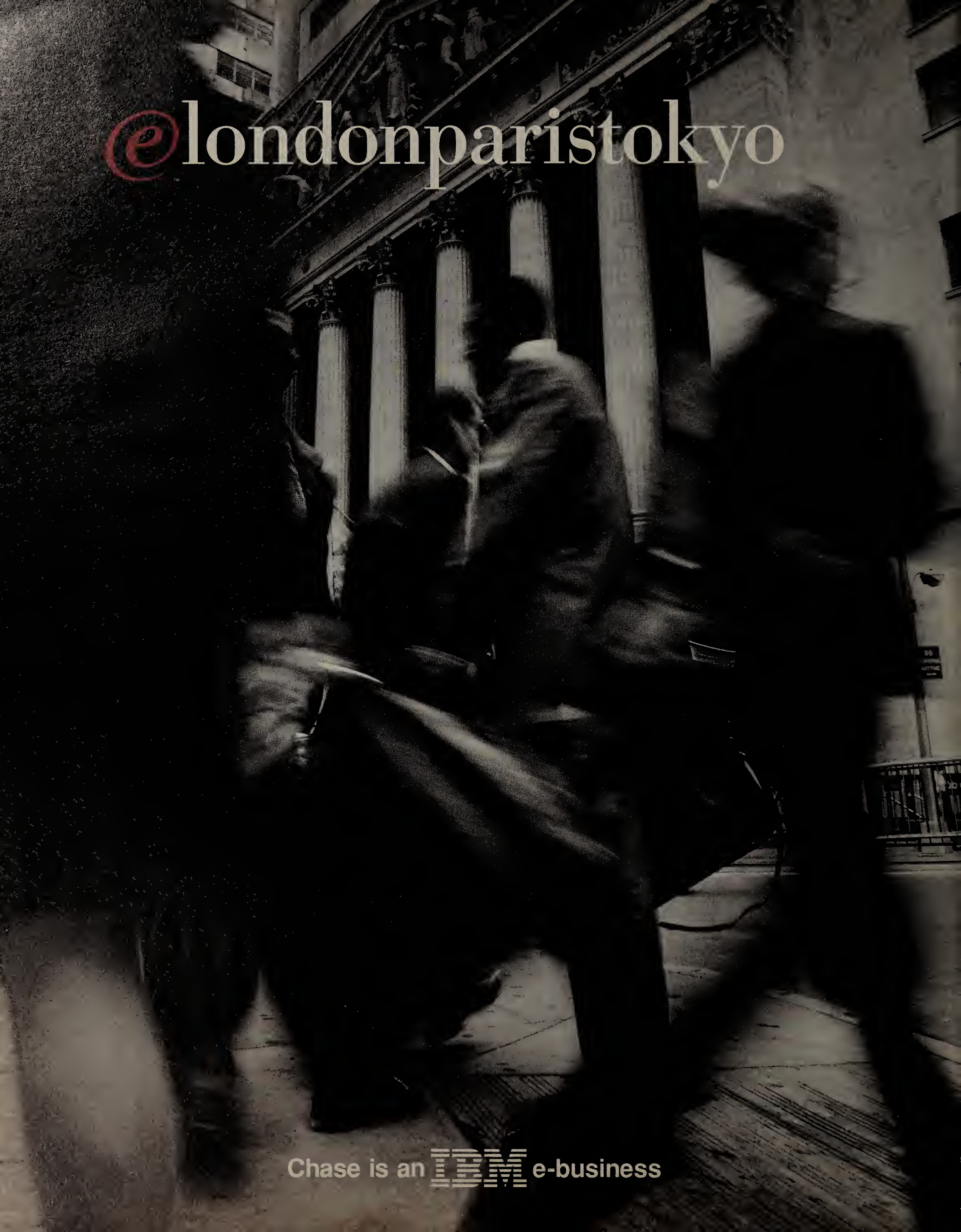
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In financial services, information is the raw material of new services and the bond in customer relationships – which are everything to Chase. To add value for clients, many of whom are financial leaders themselves, Chase is leveraging IT assets across business units in a dynamic new way. Instead of integrating systems one by one, they are integrating business processes from end to end with powerful new software from IBM.

This business integration software is designed to work across 100% of all systems in commercial use. At Chase, it is eliminating technology barriers among mainframes, UNIX® and Windows NT® environments, transforming Chase's custody business units everywhere into a single worldwide platform. For example, data from 83 markets and 30 external vendors is now validated automatically by MQSeries® Integrator as it arrives. Work flow is directed to the units best able to execute before market deadlines pass, affording Chase more time to analyze the world's financial information and apply it to the business.

As business goals evolve, the IT infrastructure is "already ready" to respond – a strategic advantage for Chase. "This allows us to stretch our imaginations," says Global Technology Executive Paula Sausville, "to deliver really powerful solutions to the business." IBM business integration software is also stretching imaginations at companies as diverse as Toyota and Texas Instruments. You'll find their stories and others at our Web site.

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Wired Windows . **Dave Kearns**

A FLAW IN ACTIVE DIRECTORY?

In Network World Fusion's "Windows NT" newsletter I've been taking a close look at Active Directory as it is implemented in Windows 2000. In the August 2 newsletter, I outlined the Active Directory replication and synchronization strategy. But the more I think about it, the more afraid I become.

Active Directory uses multimaster replication. No more Primary Domain Controllers (PDC) and Backup Domain Controllers (BDC) — all Domain Controllers are equal peers. Objects can be manipulated on any Domain Controller, and the changes are then propagated to the remaining domain controllers. While this is easier on the administrator than the PDC-BDC mode of NT 4 (where all changes had to be made on the PDC), it means that there needs to be a way to reconcile changes which might be made to the same object on different Domain Controllers.

There is no time synchronization among the Domain Controllers, so changes based on time stamps won't work. Instead, a concept called the Update Sequence Number (USN) is used. Each Domain Controller holds a table containing entries for its own USN and the USNs of its replication partners. During replication, the Domain Controller compares the last known USN of its replication partner (saved in the table) with the current USN that the replication partner provides. If there have been recent changes (that is, if the replication partner provides a higher USN), the data store requests all changes from the replication partner. After receiving the data, the directory store sets the USN to the same value as that of the replication partner. This only guarantees that all changes made on a single Domain Controller will be propagated in the correct order.

If properties on the same object are changed from different domain controllers, a series of comparisons must be made by Active Directory to decide which is the correct order of changes.

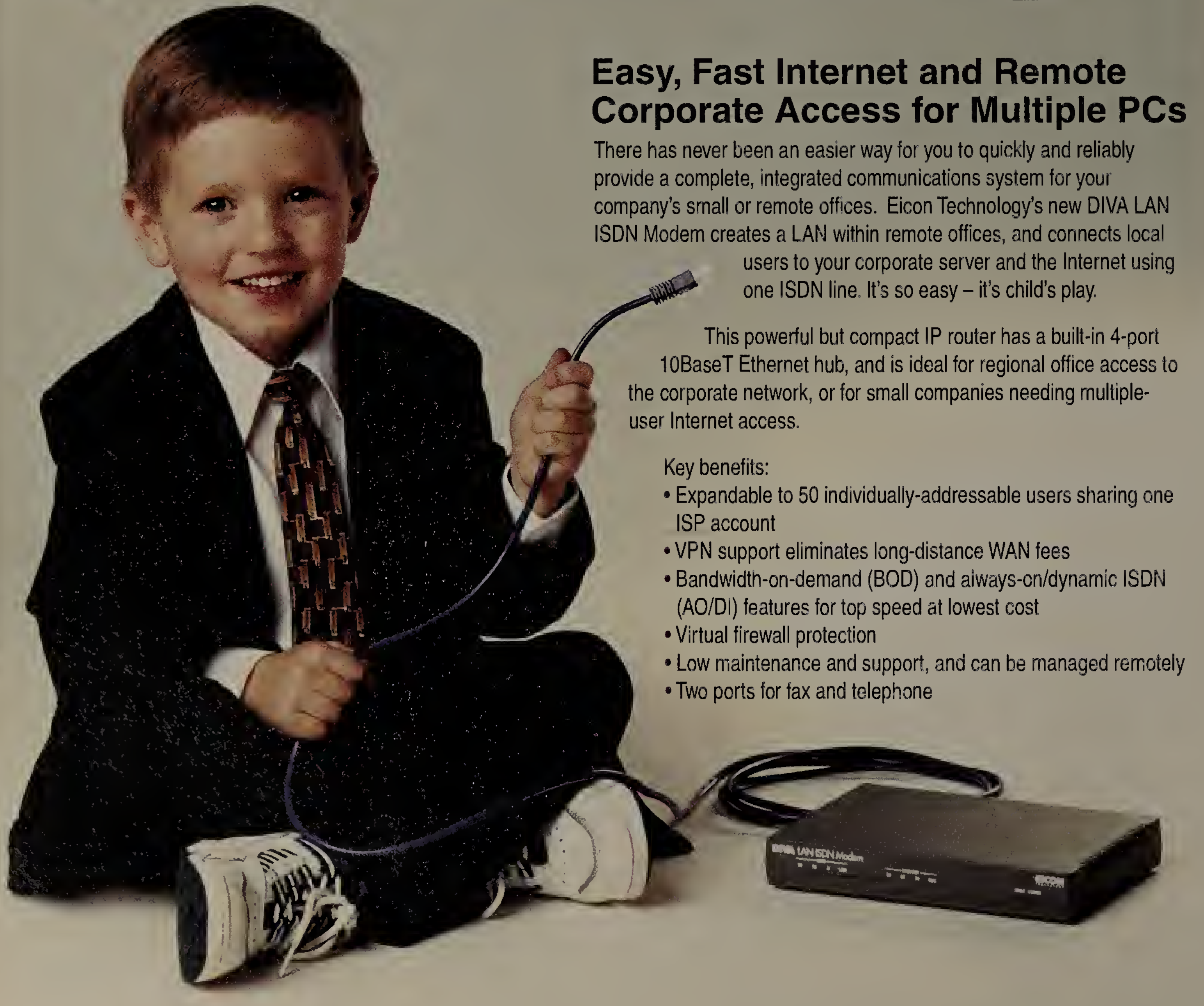
The first decider is the version number. All properties carry a version number that is incremented with each change, and the higher version always takes precedent. But if I make two changes to an object on one Domain Controller (+2 to the version number), then make a change to the same object on another Domain Controller (+1 to the version number) before the first changes are propagated, my second change — not the third one, which would be correct — is the one accepted as final.

If the version numbers on the changed object are the same, then the timestamps on the changes are used. But because there is no time synchronization between Domain Controllers, this could lead to wrong information being propagated.

If both version number and timestamp are the same, Active Directory performs a binary memory copy operation and compares the buffer size. The higher buffer size wins. If the two buffers are equal, the data is the same, and one can be discarded. If they're not the same, though, there's nothing to guarantee that the correct information is chosen — just the one with a bigger buffer size!

Because none of these methods guarantees that correct information is propagated, all possible changes are logged. You can peruse the logs, then make further changes to correct the errors — and hope that they get propagated correctly.

Get Kearns' free Windows NT newsletter via e-mail twice a week. Go to www.nwfusion.com/focus/index.html and sign up for the latest NT news.



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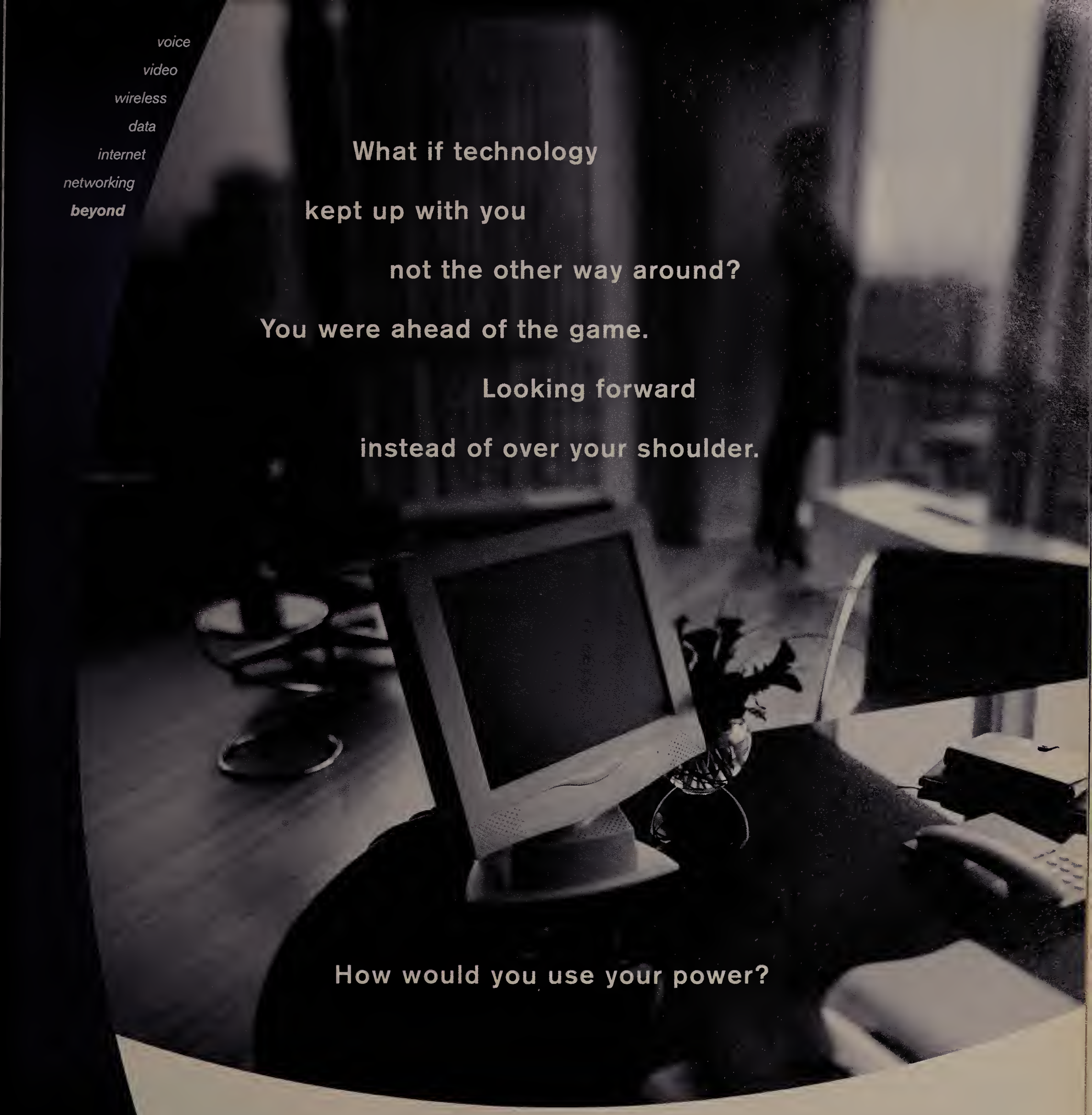
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Carriers & ISPs

The Internet, Extranets, Interexchange and Local Carriers, Wireless, Regulatory Affairs

Briefs

The **House of Representatives** has rejected a bill that would have slowed the rapid multiplication of area codes. The House voted 256 to 169 against an amendment to a spending bill that would have forced the Federal Communications Commission by next March to order a system for assigning phone numbers to carriers in blocks of 1,000. Currently, carriers can only get numbers in blocks of 10,000. There is concern that the rapid multiplication of area codes could exhaust the supply of phone numbers by the middle of the next decade.

The House will let area codes run wild.

2nd Century Communications, a local exchange carrier in Florida, last week placed what it claims is the first call between an ATM-based local phone network and the traditional public circuit switched network. The carrier's local phone network uses a switch from Convergent Networks as well as gear from Advanced Switching Communications and Vina Technologies.

2nd Century: www.2c2.com

Larry Irving, assistant secretary of **Commerce for Telecommunications and Information,** has announced he will leave his post by the end of the summer. Irving will be succeeded by Gregory Rohde, senior legislative assistant to Sen. Byron Dorgan (D-N.D.). Over the past six years, Irving worked to advance Clinton administration policies on electronic commerce, telecom and other topics.

Global One readies international VPN

Carrier couples service announcement with standard SLAs for IP, frame and other services.

BY DAVID ROHDE

RESTON, VA. — Following through on a promise to forge ahead despite ownership chaos, international carrier Global One has introduced its first IP-based virtual private network.

Making international SLAs standard

Global One is standardizing its SLAs at three levels:

Level	Network availability guarantee	Restoration guarantee
Level 1 – Highly industrialized countries	99.92%	4 hours
Level 2 – Emerging countries	99.75%	8 hours
Level 3 – Less-developed countries	95%	12 hours

Notes: Installation-time guarantee also offered on a less-structured basis. Four-hour restoration guarantee requires purchase of 24-7 maintenance contract. All listed guarantees are POP-to-POP within Global One's network.Some end-to-end guarantees available if user provides ISDN back-up.

SOURCE: GLOBAL ONE, RESTON, VA

The service, Global Intranet VPN, will use tag-switching technology, Cisco's implementation of Multi-protocol Label Switching, to initially provide two classes of service — standard and priority — for VPN enterprise traffic.

Global One coupled the service announcement with a long-awaited disclosure of its standard service-level agreements (SLA). The SLAs apply not only to Global Intranet VPN, but also to the carrier's other services.

The first of the major international ventures to come forward with standard SLA numbers, Global One is offering guaranteed network availability ranging from 95% to over 99.9%, depending on location (see graphic).

The SLA announcement impressed industry watchers.

"Standard SLAs are still few and far between for IP VPNs, let alone global IP VPNs," says Jennifer Pigg, senior vice president at The Yankee Group in Boston.

Global One has been rocked recently by reports that its three owners — Sprint, France Telecom and Germany's Deutsche Telekom — are feuding. Customers reportedly have been shortening contract terms while they wait to see if Global One will be sold or restructured.

Global One officials have been on a campaign to show the firm is no longer just an alliance. Global One has been investing in its own unified switching architectures to establish itself as an ongoing business regardless of ownership.

Part of that plan has been to install Cisco 7500 series routers in 14 locations around the world — the initial points of presence (POP) for Global Intranet VPN. That number will rise to 30 by year-end, says Adil Mahmood, Global One's director of IP network services.

By the second quarter of 2000, there should be Cisco VPN POPs in all locations where Global One currently has Nortel Networks ATM switches for its frame relay and ATM services, Mahmood adds.

Global One did not release prices for the VPN service. But Mahmood says users will have five options based on their traffic priority settings. One option is likely to enable 100% standard traffic and no priority traffic, and another the opposite. Details on the other options will be released by October.

Dial-up access options with secure tunneling will allow branch offices, mobile users or outside users in an extranet to access the network. Dedicated-access options will include private lines, frame relay and ATM.

Global One: www.global-one.net

Frontier lays out messaging service

BY JUAN CARLOS PÉREZ

ROCHESTER, N.Y. — Frontier Communications last week announced plans to start providing e-mail outsourcing services, an offering the company claims can be 50% to 75% less expensive than buying and maintaining an in-house system.

Frontier will use messaging and directory software from the Sun-Netscape Alliance, a collaboration launched last year by Sun and America Online's Netscape division, to provide software for electronic commerce and other Internet operations. Frontier also will use Webtop remote access software from Sun-Netscape and hardware from Sun.

"Outsourcing is the one trend that can level the playing field for companies competing in . . . the Internet economy," says Stuart Wells, a senior vice president at Sun-Netscape. "Businesses will no longer need to budget for endless rounds of software upgrades."

Frontier also will provide collaboration, calendaring and unified messaging services after the company launches its messaging service, officials say.

Because it is based on open standards, Frontier's messaging service will be able to simultaneously support millions of users and integrate with a customer's existing software and hardware, officials say.

To distribute its service, Frontier will use its Optronics Network, which currently connects more than 120 U.S. cities, and its Media Distribution Centers, which are data centers that provide around the clock service.

The messaging service will be available in the fourth quarter for ISPs, and will be rolled out to other Frontier customers in the first half of 2000. Frontier declined to provide pricing specifics.

Pérez is a correspondent with IDG News Service's Florida bureau.

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Wan Monitor . **Daniel Briere and Christine Heckart**

SUCCESS THROUGH FAILURE?

Failure is not an option! How many times has this overused phrase been uttered in a "rally-the-troops" company speech? Or how about this tried-and-true ditty: "This product is the future of our company!" This self-serving, win one for the gipper bravado has become a mainstay in the corporate technology world today.

Just once we would like to see a company issue an honest press release with statements like: "We developed this product as a trial entry into the marketplace" or "This may not be exactly what the market wants, but it is only Version 1 of a new product, and we will make Version 2 much better."

Has the desire to score a touchdown on every play blinded organizations, including IT organizations, to the usefulness of an occasional failure? The speed of technological change coupled with the increasing fickleness of customers makes this the perfect time for organizations to be more open than ever before to risking limited failure — especially when evaluating new and emerging markets.

Look at the current Internet .com craze. Companies losing billions of dollars continue to be rewarded for taking risks that may not pay off for years, yet other organizations maintain strict rules about return on investment, acceptable payback periods and mandatory profit-margin levels. We are brainwashed into believing these rules exist to make our companies better and stronger. Managers at all levels need to stop staring at the bright light and spinning disks or be ready for unemployment.

Limited failures provide opportunities for organizational and employee growth. Without the ability to fail, individuals and organizations become stale, uninventive, stagnant and eventually useless.

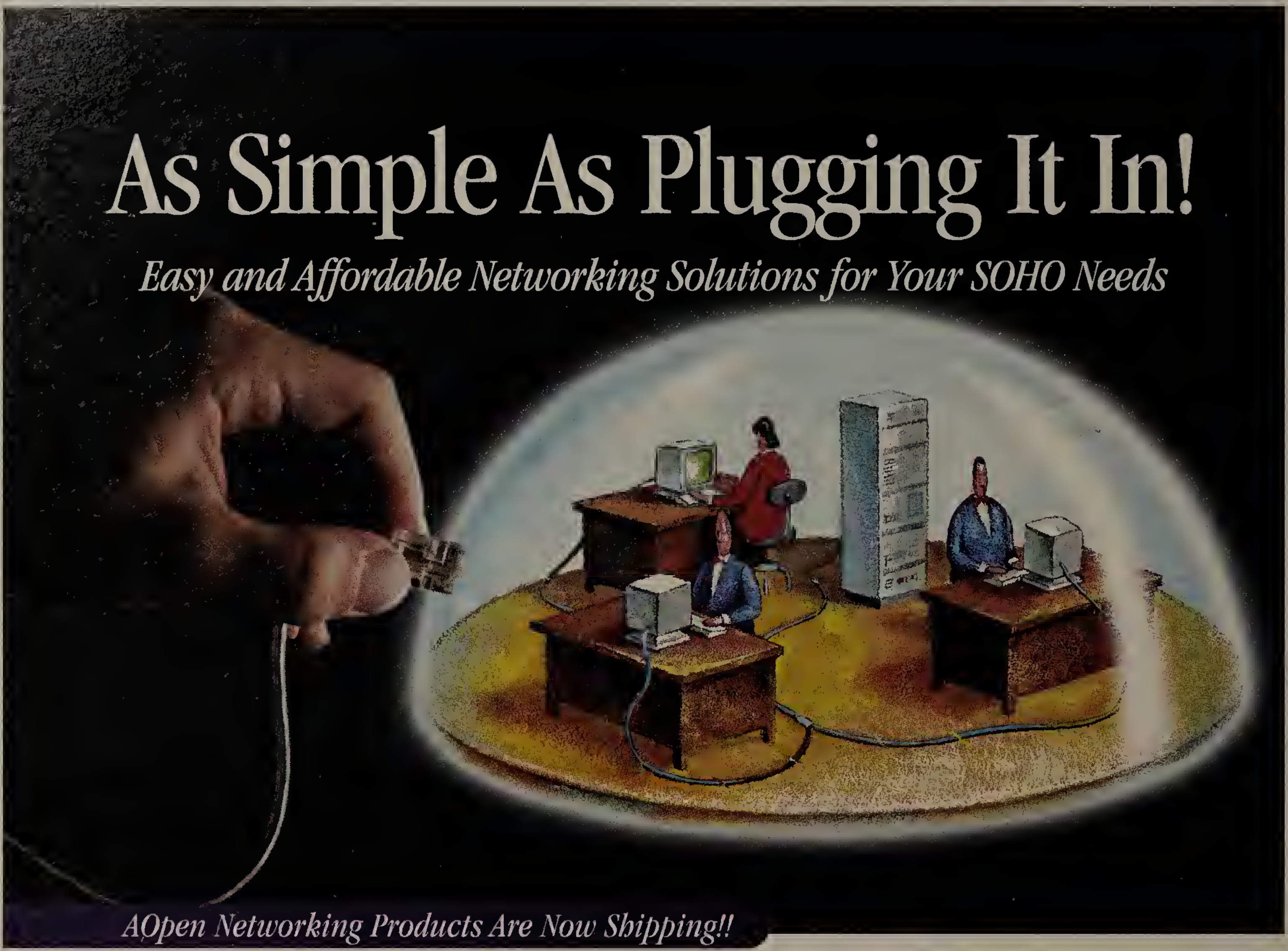
Mindsets and processes that thrive on eliminating and avoiding risk may be slowly killing your company. Employees frustrated and afraid to take risks because of the consequences of failure provide little extra value to the organization. After a while, these employees end up across the street working for a competitor willing to let them take a risk.

What organizations, especially IT and e-commerce-centric entities, need is an environment that encourages smart risk-taking. Rather than considering a project a potential failure because the market numbers are not high enough or the potential margin is below accepted norms, organizations should embrace the opportunity to learn what the market really wants and will pay for.

Now before our e-mail box becomes flooded with managers screaming "How dare you tell my people to fail on purpose!" or "How can a company succeed if it is designed to accept failure?" we ask you to reread this column. We are talking about organizations needing to accept some higher levels of risk. Some markets cannot be quantified, analyzed and put into neat little segments. It is in these new and emerging markets that organizations must be more open to taking smarter risks and learning from their failures.

Be careful, because the "not invented here" syndrome could lead to an outbreak of a "not a player in the market" disease strong enough to kill any company.

Briere is president and Heckart is vice president of TeleChoice, a consultancy in Boston. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.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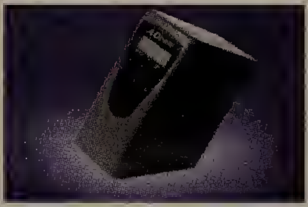

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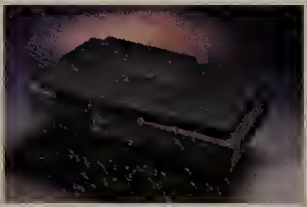

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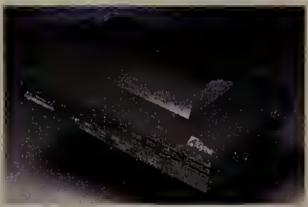

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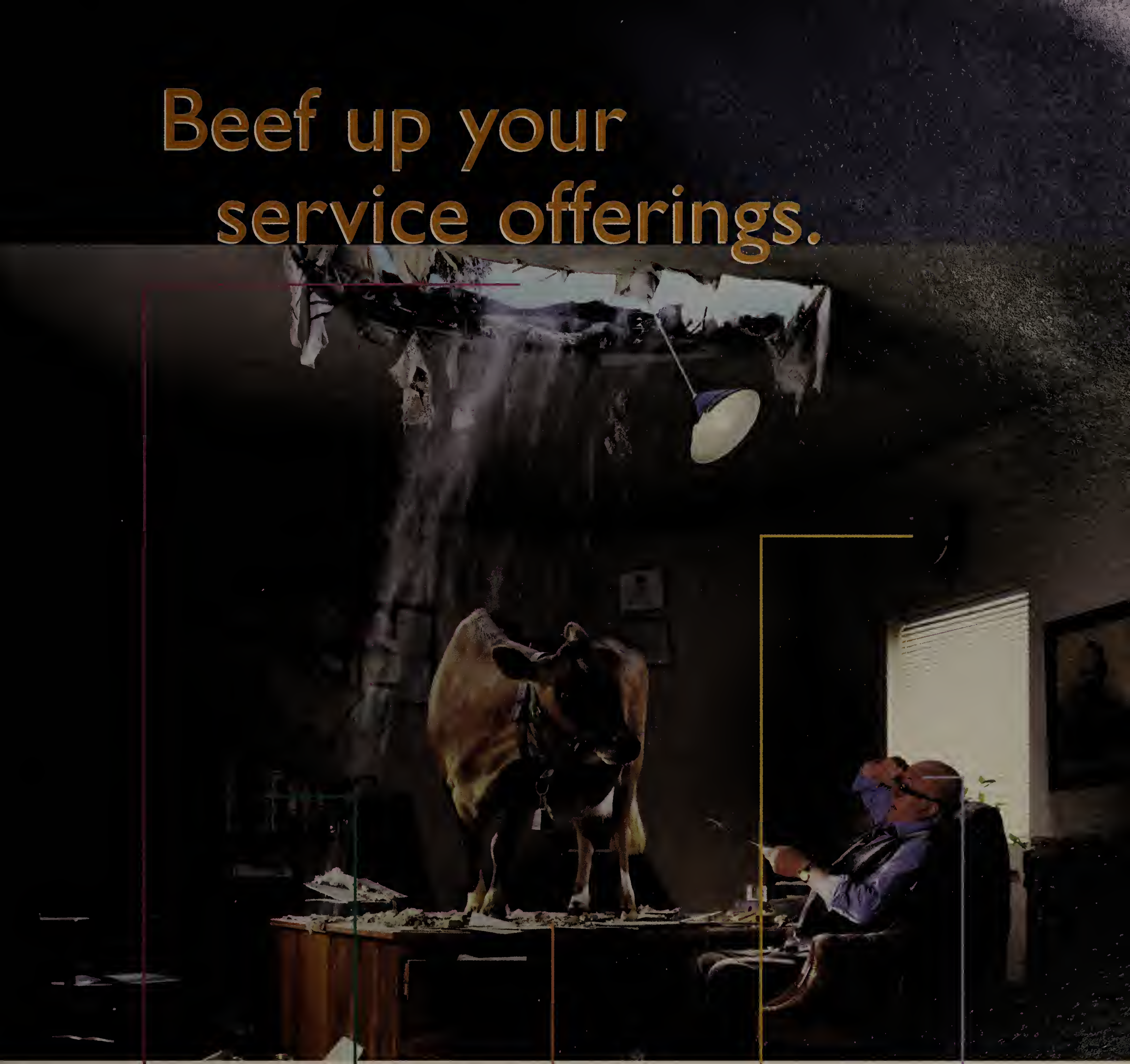
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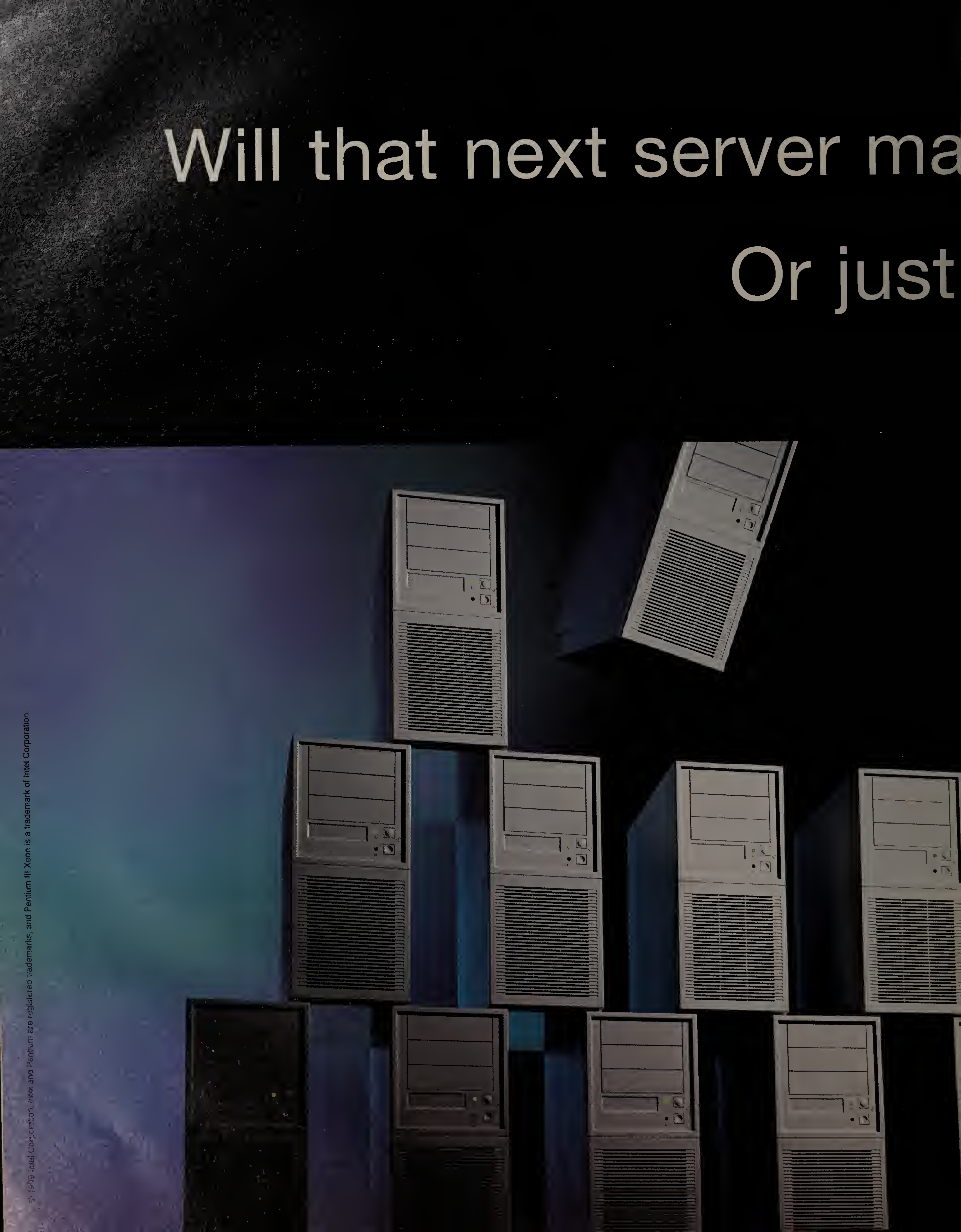
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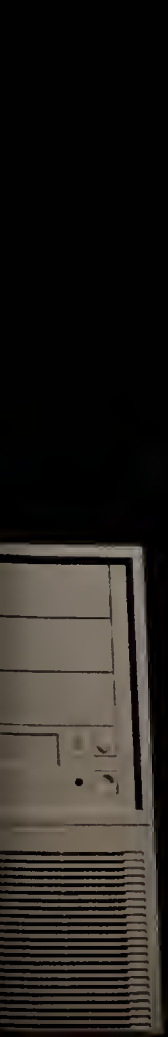


A new twist on DSL: Voice services

BY TIM GREENE

So far, there's been lots of talk and little action about voice-over-digital subscriber line services — but that situation is about to change.

Just last week, two service providers announced plans for voice-over-DSL services, and others hinted that they would come out with similar offerings soon.

CONVERGED SERVICES

While voice over DSL is a misnomer, the technology promises to offer customers savings soon.

When the services become a reality, customers can expect lower prices and a single line that delivers voice and data services, which have been provisioned in the past over T-1 lines.

One of the first carriers to latch on to voice over DSL is Network Telephone, a new carrier in Pensacola, Fla. The carrier says it will sell combined voice, data and Internet access services over DSL by year-end using gear from Lucent and Copper Mountain.

TelePacific Communications, a local voice/data/Internet provider based in Los Angeles, plans to use Jetstream Communications and Cisco gear to support voice and data services over DSL soon. The carrier is testing the technology at a customer site now.

Neither service provider would share specifics on prices or rollout schedules.

Meanwhile, nationwide DSL specialists Covad and NorthPoint say they will announce voice-over-DSL services, probably within the next few months.

Spokesmen for NorthPoint and TelePacific say they are waiting to see whether equipment necessary to support such services is ready for the rigors of carrier networks.

How it works

DSL is known best as a data technology that can add a multimegabit data stream to a regular phone line. With some flavors of DSL, the data channel can be added without disrupting the standard analog voice channel on the line.

But that's not the voice referred to in the term voice over DSL. Voice over DSL is more accurately described as voice over IP over DSL or voice over ATM over DSL.

A box at the customer site, called an integrated access device, connects to the local data network and the office phones. Voice and data traffic is converted to IP packets or ATM cells and crosses a DSL link into the carrier network.

The carrier network sorts the packets or cells and routes them to the appropriate destinations. If voice is to be delivered over the public voice network, a conversion box inside the carrier network, known as a voice gateway, makes the needed conversion.

This gateway also takes the call features and phone services —such as caller ID, Centrex, call waiting and three-way calling — that reside on voice switches and delivers them to voice-over-DSL customers.

Voice over DSL came to light last fall when start-up Jetstream announced at the ADSL Forum that it was working on a voice gateway. Since then, big-name companies such as Lucent, Cisco, Nortel Networks and Siemens have joined the market.

Vendors are busily working to provide interoperability among their products. For example, more than 15 makers of customer gear have licensed Jetstream's technology to include in their integrated access devices.

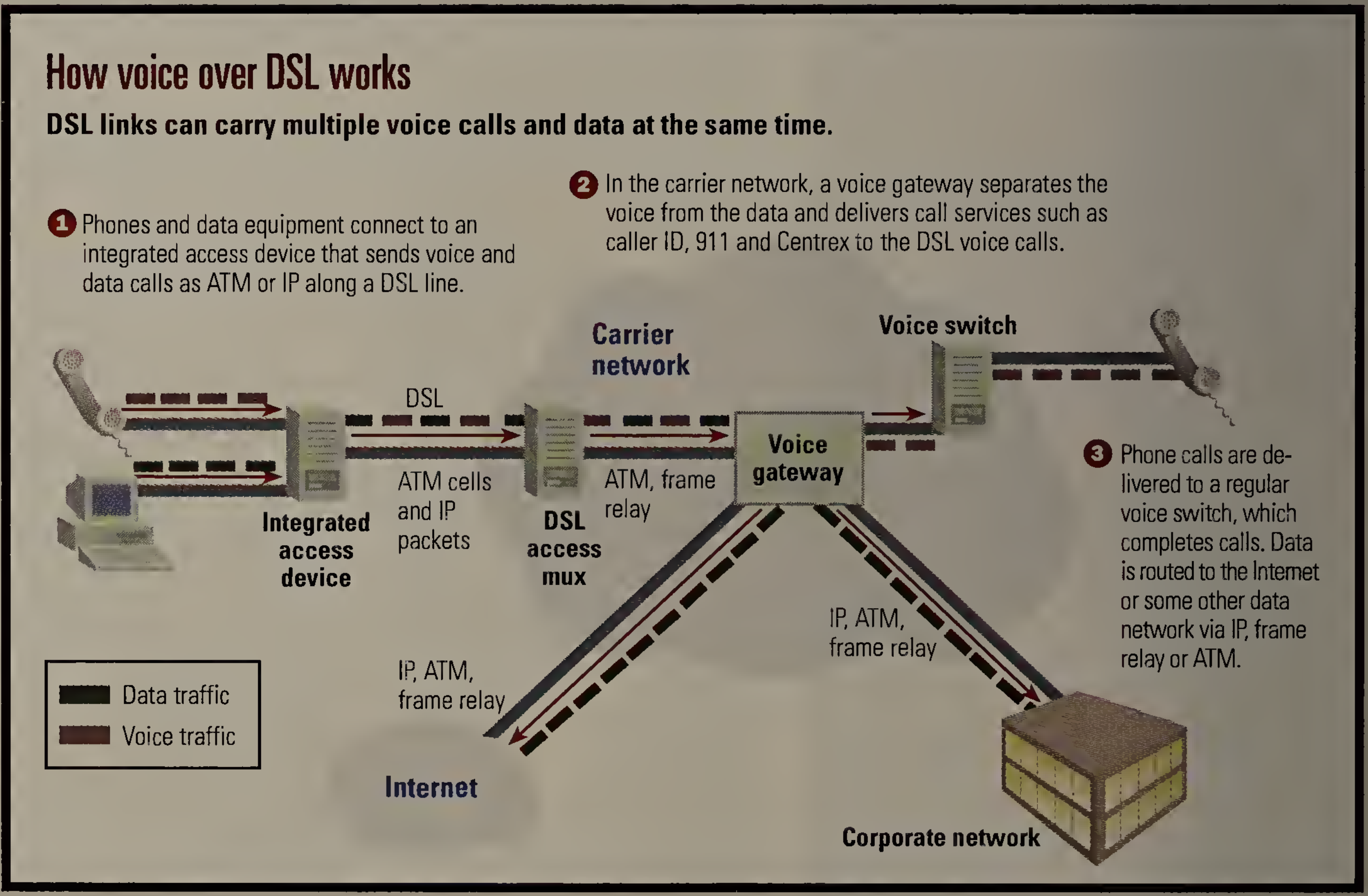
Jetstream, in turn, has shown interoperability with Nortel, Lucent and Siemens voice switches — devices that would have to connect to the Jetstream box to deliver voice calls.

Electrical problems

An important consideration is that, unlike regular phone lines, DSL voice lines don't work when the electricity fails. So vendors have to figure out what to do when power to the integrated access devices is cut off, says Claudia Bacco, director of DSL products for TeleChoice, a telecom consultancy in Boston.

She expects equipment makers to work out those problems in a timely fashion and to be able to deliver services soon.

With voice capabilities, DSL services become even stronger competitors to T-1 lines, which have been used to carry voice and data for years, says Chip Ach, chief technology officer for Harvard.net, a New England DSL vendor. DSL is already less expensive than T-1 for similar bandwidth, and requires a single pair of wires rather than the two pairs required by T-1.



How voice over DSL works

DSL links can carry multiple voice calls and data at the same time.

❶ Phones and data equipment connect to an integrated access device that sends voice and data calls as ATM or IP along a DSL line.

❷ In the carrier network, a voice gateway separates the voice from the data and delivers call services such as caller ID, 911 and Centrex to the DSL voice calls.

❸ Phone calls are delivered to a regular voice switch, which completes calls. Data is routed to the Internet or some other data network via IP, frame relay or ATM.

But George Hu, product manager for voice products at NorthPoint, says that cooperation of established telephone companies will be crucial.

DSL carriers lease the actual wires that DSL runs over from the established carriers. If something goes wrong with the wires, the DSL carrier needs to rely on the established carrier to fix them.

So far, the DSL carriers cannot get guarantees that the lines will be fixed as fast as T-1 lines get fixed, Hu says.

Another problem DSL faces is that it is not universally deployed, whereas T-1 lines are available just about everywhere.

And it will take actual services to prove whether voice over DSL can be trusted, Ach says. "The jury's going to be out until people actually use this technology," he says. ◪

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Briefs

Trend Micro has begun shipping Windows NT-based anti-virus and mail content-filtering software designed to work with the Lucent Managed Firewall. InterScan VirusWall 3.2 detects computer viruses that might pass through the firewall. The software costs $725. Trend Micro's other new offering, eManager, is an Internet gateway for e-mail content filtering that costs $181 per 25-user license. The products can be purchased as a package for $816. By year-end, Trend expects to ship versions of the products for Solaris.

Trend Micro's new software bolsters Lucent firewalls.

Trend Micro: www.trendmicro.com

Nexor in Gaithersburg, Md., last week announced software that uses neural network technology to sort electronic messages and attachments that come to an organization over the Internet.

Nexor's new Interceptor uses neural network technology from Autonomy to handle e-mail received at a generic e-mail address listed on a Web site. After watching an operator sort e-mail, Interceptor learns, for example, to send cover letters and resumes to the human resources department.

Nexor officials liken the software to an e-mail firewall because it also scans e-mail for viruses and filters out junk e-mail. It monitors outgoing mail, as well.

Interceptor runs on Windows NT or Solaris. Prices start at $120,000. It is expected to ship at the end of September.

Nexor: www.nexor.com

Can Candle burn bright in e-comm mgmt.?

CEO Aubrey Chernick focuses on content to keep his company up on system management changes.

NetworkWorld Q&A

Systems management vendor Candle knows that it has to evolve from its mainframe roots to manage all the variables introduced as companies embrace e-business and e-commerce.

As Candle's Roma application integration software evolves to take on these areas, CEO Aubrey Chernick considers a new name for the software: "eRoma." But leading the way to e-business is going to take more than just an extra "e." Network World *Senior Editor Jeff Caruso recently sat down with Chernick to talk about what's ahead for Candle.*

What can a 23-year-old company like yours do to keep up with changes in systems management?

We need to lead the way. Keeping up in this marketplace is a losing proposition. For example, take a look at how you can classically manage e-business. Managing it through SNMP alerts and events is not going to cut it. It doesn't matter how many alerts you have. If you have dynamic transactions going all over the place, how are you going to instrument it? We needed to redefine the whole approach. The classic approaches are going to hit a wall managing e-business transactions that go across multiple companies and service providers. Most infrastructure people fix problems by working on the infrastructure and adding bandwidth. [But remember, there still] can be choke points that are not on their premises — choke points that are on the ISP network. But companies can vary the content being pushed out to the consumer.

Is this the adaptive service-level management you have talked about?

Right. We'll adapt the content side, in terms of how much information users are grabbing. The infrastructure people certainly can bring in more bandwidth and faster servers. That may help out. In other cases, we may have to automatically change the workload or change the content [to compensate for bandwidth constraints].

See **Candle**, page 43

Elron Software upgrades Internet access blocker

BY CAROLYN DUFFY MARSAN

As more organizations establish Internet usage policies for their employees, Elron Software is beefing up its Internet usage monitoring tool to provide more robust back-end capabilities for network managers.

CommandView Internet Manager 5.0, which will ship at the end of August, features better integration with Windows NT and support for Microsoft SQL Server.

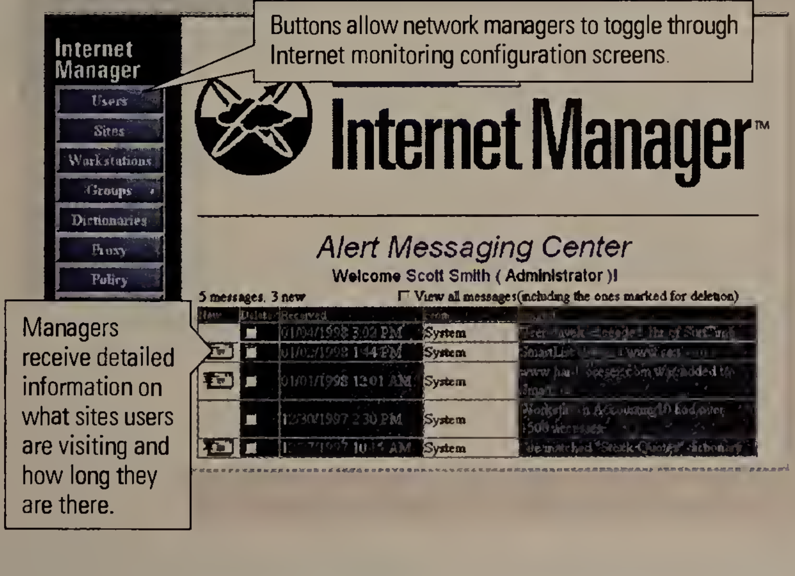
The network sign-on for Internet Manager is now integrated with that of Windows NT, making it easier for administrators to manage passwords and track end-user Internet usage.

SQL Server support was added for large organizations that need a more scalable system.

Previously, Internet Manager only stored Internet usage data in a smaller Microsoft Access database.

The surfing stops here

Elron's Command View Internet Manager 5.0 provides real-time views of employees' Web surfing activities.



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	☐	01/04/1998 3:02 PM	System	[illegible]
✉	☐	01/02/1998 1:44 PM	System	[illegible]
✉	☐	01/01/1998 12:01 AM	System	[illegible]
	☐	12/30/1997 2:30 PM	System	[illegible]
✉	☐	[illegible] AM	System	[illegible]

Internet Manager lets organizations block their employees' access to certain kinds of Web sites, such as those offering pornography or gambling. Alternatively, administrators can use the software to alert users to inappropriate Internet usage and to compile regular usage reports.

International Data Corp., a market research firm in Framingham, Mass., predicts the market for Web usage monitoring software will grow 72% this year alone.

By 2003, IDC predicts 3.9 million businesses will own this type of software and that the market will reach $260 million per year.

See where they're surfing

Jeff Uslan, manager of information protection at 20th Century Fox, uses Internet Manager to monitor employee Web surfing rather than to block particular sites.

Employees who visit forbidden sites receive messages on their screens. Only if an employee's usage of forbidden sites or overall Web surfing becomes excessive are the human resources and legal staffs called in.

"We treat everyone as an adult,"

See **Elron**, page 43

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E-commerce software catches Wells Fargo's eye

RightWorks' new Windows NT Server software to support catalog-based procurement for the agricultural industry.

BY ELLEN MESSMER

SAN JOSE — RightWorks last week began shipping an updated version of its Windows NT Server software for online catalog-based procurement, and one customer, Wells Fargo Bank, is going to launch a new business based on the product.

The RightWorks 4.0 procurement package can be used to support customized selling of items by multiple organizations to their business partners. Wells Fargo plans to open an electronic commerce site based on the new software for use by the agricultural industry, a sector in which the company maintains a thriving banking business.

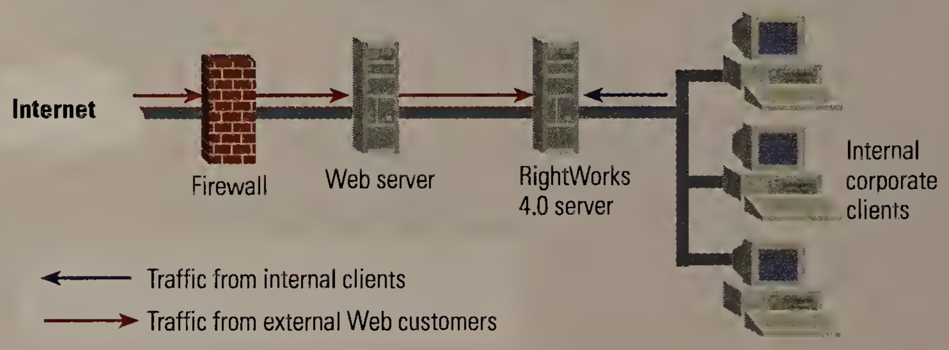
Under the plan, Wells Fargo will set up a Web site for buying and selling agricultural goods. As the center of this transactional crossroads, the bank could automate account credits and deductions according to a customer's wishes at the point of each purchase.

"This project is under development. But I can't tip my hand to my competitors by saying any more," says Michael Graves, senior vice president at Wells Fargo.

Wells Fargo will also use RightWorks 4.0 internally for Web-based purchasing of supplies that require employees to get authorization and approval.

Two servers for the price of one

RightWorks 4.0 sits behind the corporate Web server, where it can update Web customers' accounts after electronic transactions are made. On the back end, the server can also be used to manage and track internal corporate purchases.


Internet
Firewall
Web server
RightWorks 4.0 server
Internal corporate clients
Traffic from internal clients
Traffic from external Web customers

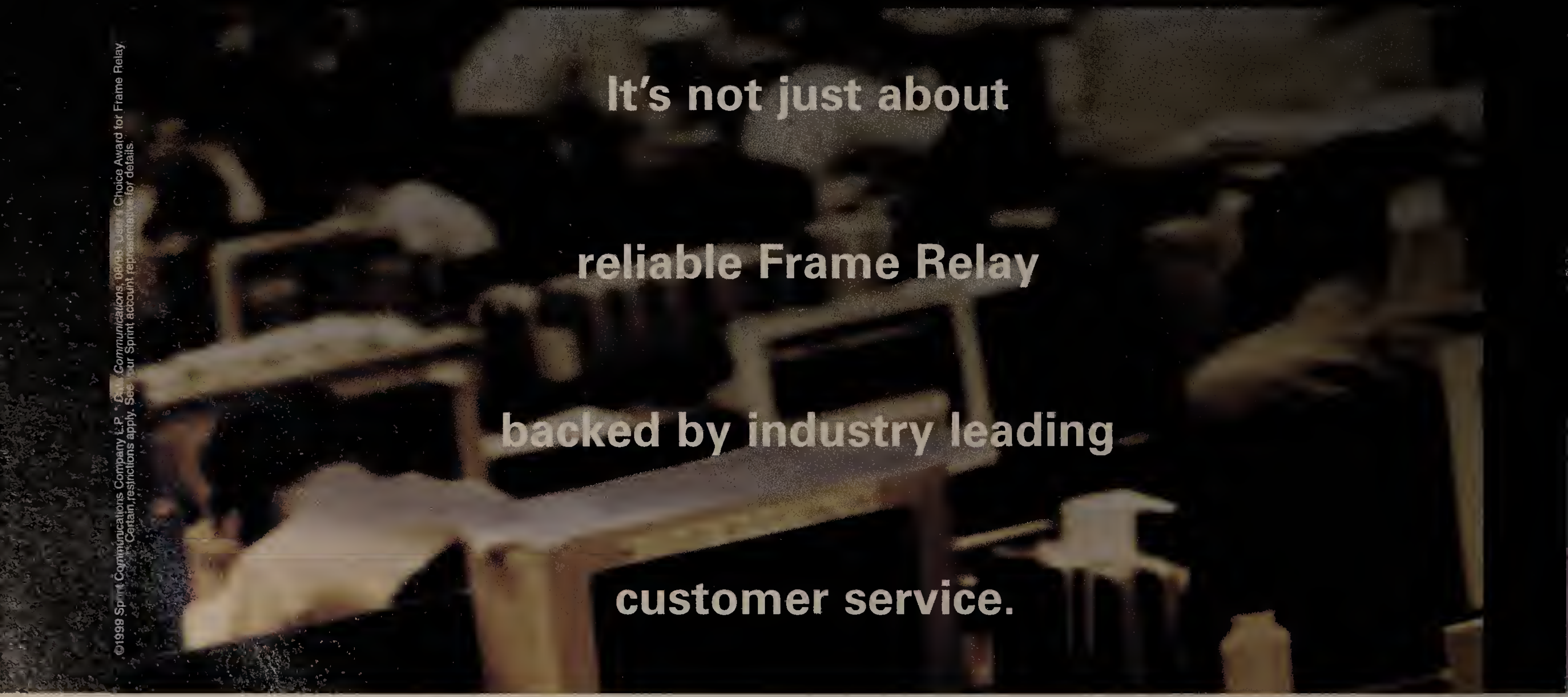
The new multiorganizational support in RightWorks 4.0 lets each company manage and access its own catalog, as well as configure the workflow according to the company's business rules.

According to RightWorks, each user organization can also specify data structures for different elements, such as general-ledger account numbers.

Another new feature lets employees make purchases without getting each individual requisition approved. The software does, however, keep the employees' manager notified of spending against the budget.

Pricing for RightWorks 4.0 starts at $250,000 for 1,000 users. For use in establishing community e-commerce sites, such as the one envisioned by Wells Fargo, RightWorks will typically offer a site-model license for 1% of the dollar volume going through a site.

RightWorks: www.rightworks.com.



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Elron,
continued from page 39

Uslan says. "We use the Elron software to keep people honest. But we don't target anybody, and we don't let management use it to target anybody," he says.

Uslan also has found the software useful for tracking which Web sites users are going to most often to see if it is worth bringing those capabilities into the company's intranet.

"That product was very helpful in deciding to add PointCast locally to our services," Uslan says. "We found that we were using 50% to 60% of our bandwidth going to the PointCast site."

What Uslan likes best about Elron's software is that it has a simple graphical interface that anyone can use. His favorite feature in the new version is the ability, with one mouse click, to respond to an alert and prevent a user from visiting a forbidden site.

Pricing for Version 5.0 starts at $900 for a 25-user license.

Elron: www.elronsoftware.com

Candle,
continued from page 39

Do you change content by changing the way the content is developed in the first place?

We might be able to come up with some mechanisms that are external to how the application is developed, and yet develop other mechanisms where we can give the Web application developer controls so he can manage his content delivery based on the response time of the user.

Are there things you take from Candle's mainframe experience that you can use in the new environment?

We have learned that when you have a real-time system and real-time choke points, often there's a limited amount of adaptive things you can do in the infrastructure.

That's when you need to look at the application side. This gave us the background to figure out this adaptive approach on the Web.

Another thing we've learned about is problem determination. In a simple mainframe system, to isolate a problem between MVS and CICS is difficult enough. Client/server gets a lot more complicated. When you go to the Web, problem determination time is very critical.

How do you see mainframes fitting into e-business and e-commerce?

The mainframe is a big legacy server where the corporation has its customer data and its manufacturing data. That data is going to be on the mainframe for a long time, so Web systems have to tap into that, often tapping into multiple mainframes at different suppliers.

Could enterprises just buy Candle software to help them do that?

We would help someone create an e-business portal. We'd have what we call a Roma "backplane," and in that backplane behind the portal, you could plug in applications from the mainframe area, Unix area, NT area, etc.

What did you think of the Platinum-Computer Associates merger?

We were trying to figure out Platinum's strategy, as they were just accumulating all these different businesses they never really integrated. Our assumption is CA needs more maintenance revenue, and that's how they achieved it.

Given all the industry consolidation, do you feel pressure to make acquisitions?

No, because our business is a little bit more diversified. We see ourselves as a vendor that provides solutions on the integration side and the management side. You don't see too many other companies around that are providing that combined strategy. ◪

More
Online

Head online for more of our interview with Candle's Aubrey Chernick.

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'Net Insider

Scott Bradner

ARE YOU USEFULLY CERTIFIABLE?

Public-key infrastructure (PKI) and digital signatures are all the rage these days, with cover stories in a number of trade magazines and even a front page story in the *Boston Globe* the other day. But despite all the hype, it is far from clear what I can do with your digital signature if you send it to me.

A bit of background first. Public key cryptography refers to technology in which a user has a pair of cryptographic keys: one that is kept secret and is referred to as the private key, and an associated key that can be public. Any data encrypted in either one can only be decrypted by the other of the pair. If I want to send you a secret message, I would encrypt it in your public key before sending it to you, knowing that your private key is required to decrypt the message.

One more bit of background: A digital signature is created by running a chunk of data (such as a file) through a mathematical algorithm to get a large numerical value that is unique to the original data. The value is then encrypted (referred to as "signed") in the private key of the sender.

The signature is then sent along with the original data. The receiver decrypts the digital signature using the public key of the sender and the resulting value is compared to the result of the receiver running the data through the same algorithm that the sender used. If the values match, then all is OK with this message. (It could contain garbage but it's the same garbage that was sent.)

I need a reliable way to get your public key for either of the above functions, and that is where PKI comes in. A PKI is a set of servers, known as certificate authorities, from which I can get a copy of your public key with a digital signature, encrypted in the private key of the certificate authority for verification. This is called a certificate.

One thing that seems to be all too commonly overlooked is that it's not enough to know that a particular certificate authority signed your certificate. I also need to know what processes that certificate authority uses in its operations. In addition, I need to find out who you are before giving you a certificate to know if I can trust the certificate authority and its certificates.

The description of these processes can be very complicated indeed. RFC 2527 (www.ietf.org/rfc/rfc2527.txt) takes 45 pages and lists 178 things to include in a good description of how a certificate authority operates.

Restricting a PKI to use within a single organization can sidestep most of the potential difficulties with PKIs. But anyone thinking that a global PKI will soon facilitate electronic commerce should read RFC 2527 and weep.

Disclaimer: Sometimes there is weeping when exams are returned at Harvard, but the above lament is my own.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

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Technology Update

An Inside Look at the Technologies and Standards Shaping Your Network

Clustering technology: Today and tomorrow

BY YOUSEF KHALIDI

As more companies extend their business models to the Internet, they are learning the hard way that downtime isn't just an inconvenience. Even a few minutes of network downtime can cost thousands of dollars in revenue, damage public faith and sap productivity.

To help avoid downtime, businesses are turning to clustering technology to keep networks running without disruption. With clustering, multiple servers — or nodes — work together as a single entity to help ensure that applications, system resources and data are constantly available. In a clustered environment, should one node fail, its workload can be spread across the remaining servers in the cluster

However, clustering today is often a hodgepodge, reactive technology created solely to reduce server downtime, so greater availability through clustering comes at a price. Because clustering techniques are layered on top of the server operating system, they are hard to manage and do not automatically share resources between nodes, a feature that would enhance the cluster's performance.

Unfortunately, the very basis of clustering — the use of redundant components — contributes significantly to the complexity of managing and maintaining a clustered system. Next-generation clustering products will help eliminate this complexity by integrating clustering into the operating system and making a complex pool of clustered components as efficient and easy to manage as a single system.

Next-generation clusters could rely on a Cluster File System (CFS) to enable global access to all files, devices and network resources in the system, and create a full single-system image.

The CFS can let any user — remote or local — access any application, no matter which server in the cluster is hosting the software. Any application can access any file on any node of the cluster. Even if an application is moved from one node to another, no change is required for it to access files across the system.

The CFS plugs into the existing Unix virtual file system (vnode) interface. This means the file systems and volume managers using vnode today, such as Unix File System, Veritas File System, CD-ROM file system, Solstice Disk Suite and Veritas Volume Manager, automatically inherit cluster file-system capabilities.

In addition to global file access, next-generation clustering environments also make all devices accessible and visible throughout the cluster. The I/O subsystem makes it possible to access any device in the cluster from any node, no matter where the device is physically attached. From this emerges highly available global device access.

As with the other components of the architecture, the network presents a single-system view to applications and users. In a clustered environment, it is essential that applications and users can treat the cluster as a single entity and that it is referred to as a single logical host name and global IP address. This feature makes it possible for any client to access the cluster using the shared logical name and to run on any node within the cluster.

Global file and device access, combined with global network services, enable a systems administrator to log on at any node of the cluster and access any of the tools needed for system monitoring, repair or maintenance. The administrator has a clusterwide view and, no matter which node a process is running on, it responds to management commands as though all processes were running on a single machine.

In addition, this single-system image of an advanced cluster also increases the flexibility and scalability within the cluster. With some products, you can cluster up to four nodes containing up to 256 processors. But scalability doesn't stop there. With advanced clustering, you can also add reliable storage capacity as needed.

Further, a global network environment achieves automatic load balancing. By monitoring workloads and server response times across all nodes, an advanced cluster can determine the optimal node on which a client should run.

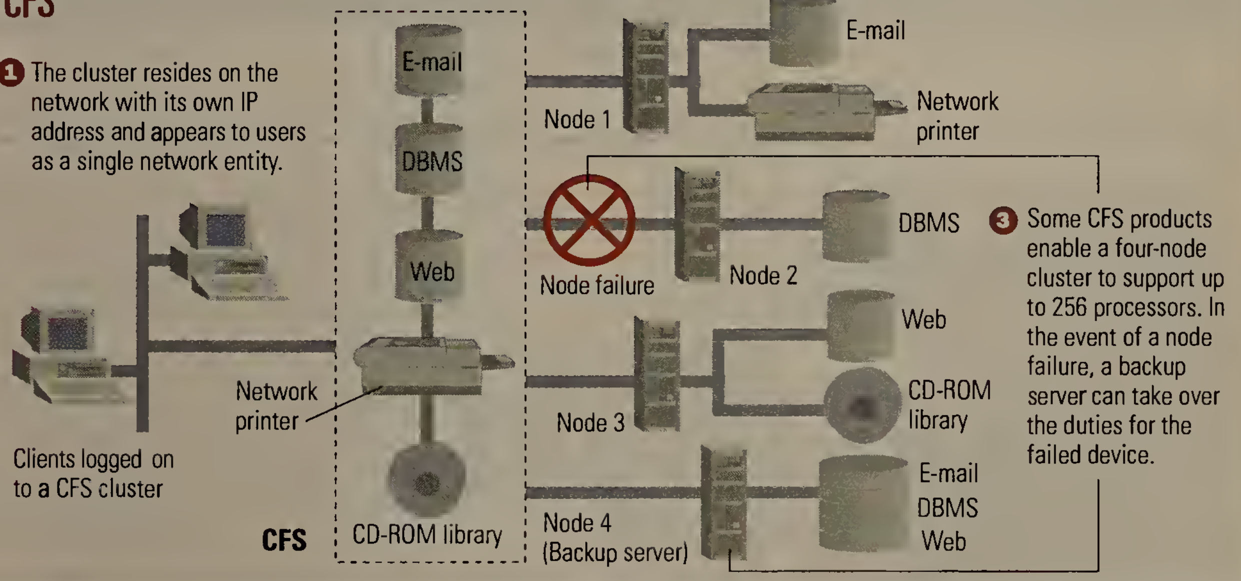
Today through server clustering, careful planning and network maintenance, downtime can be virtually eliminated.

Khalidi, distinguished engineer for clustering technologies at Sun, can be reached at yousef.khalidi@sun.com.

HOW IT WORKS

Server clustering with CFS

The Cluster File System, a next-generation clustering technology, simplifies client access to network resources and provides failover and load-balancing capabilities. CFS plugs into existing Unix clustering schemes.



① The cluster resides on the network with its own IP address and appears to users as a single network entity.

② The CFS provides access to all applications, files and devices on clustered nodes. Although these resources physically reside on individual servers, any client can access any server regardless of the server the client initially logged on to.

③ Some CFS products enable a four-node cluster to support up to 256 processors. In the event of a node failure, a backup server can take over the duties for the failed device.

Ask Dr. Intranet

By Steve Blass

In Windows NT 4.0, can I set the default permissions for a user's home directory on creation? Adding John Doe with a home directory of \\server\users\johndoe, I'd like the default directory permission to be "Full Access for Administrators" and "Change Access for John."
John Diamond, network engineer, Green Bay, Wis.

Based on information on http://support.microsoft.com, you'll need to do a little work after you create each user home directory or use additional scripted commands.

In an article "Admin Wizard Creates Home Directories with Incorrect Permissions," Microsoft suggests using User Manager for Domains to create home directories with the correct permissions of Full Control for the user or using Explorer to modify the permissions after the directory is created. The article states: "Microsoft has confirmed this to be a problem in Windows NT Server 4.0. We are researching this problem and will post new information . . . as it becomes available."

A posting titled "How To Automate Folder Permissions" provides three script files for use in automating directory permission settings. "Batch Process to Create and Grant Access to Home Directories," shows how to do it with batch files for NT 3.5 and 3.51.

A similar approach is to use the Windows Scripting Host facilities and a scripting language to automate the tasks associated with establishing user accounts.

Blass is a network architect at Sprint Paranet in Houston. You can reach him at drintranet@paranet.

Gearhead — inside the network machine . **Mark Gibbs**

REVISITING TCP/IP LAYERS AND APPLICATION PROTOCOLS

A couple weeks ago, Gearhead talked about sockets and that seemed to fill a void for many of you (*NW*, July 26, page 32).

This week, I'll move on up the TCP/IP stack (blessedly there are fewer and less torturous layers than in the good ol' OSI model). My topic for today is Internet application protocols such as HTTP and FTP.

Application protocols belong to the application layer, the topmost layer of the TCP/IP architecture. Sitting below that is the transport layer, responsible for the end-to-end delivery of data.

Data is delivered either reliably (that is, guaranteed) by TCP, or unreliably (as in "best effort," when you don't care if the data actually gets there) by User Datagram Protocol (UDP).

Below the transport layer is the Internet layer, which is used to package, address and route data using the Internet Protocol. The other important protocol in the Internet layer is the Internet Control Message Protocol (*NW*, June 21, page 54).

Below the Internet layer is the link layer. This layer handles the transmission of IP data over network hardware (Ethernet, token ring, wet hairy string and so on).

Now the reason for describing the layers is to clarify how application protocols are built: Application protocol data is wrapped in a TCP or UDP packet that, in turn, is wrapped in an IP packet. So where is the data that specifies the source and destination sockets (the combination of IP address and port) located?

Remember that the Internet layer is responsible for addressing, so source and destination IP address data is stored in the IP packet. Inside that packet is TCP or UDP data, and that is what contains the destination and source port values.

When an application wants to send a message to another application, it needs to know the destination address and socket. The destination address is determined by either an explicit numeric IP address or by the target machine's fully qualified domain name (FQDN). In the latter case, the FQDN is sent to the Domain Name System to (hopefully) be resolved into a numeric IP address.

The port that will be used will depend on the protocol being used, as well on the target system's configuration.

For example, if the source application is a Web browser and it wants to talk to a Web server, then Port 80 will be the destination port. If the machine is hosting multiple Web servers, the destination port for the second server will often be set to 8080.

The sender's source port will be a randomly selected value usually between 1,024 and 5,000. Because these ports are usually short-lived (the client normally stops using the port when the transaction is completed), they are called "ephemeral ports."

Note that when Web browsers talk to FTP servers they become, for all intents and purposes, FTP clients. The same applies when browsers talk to Lightweight Directory Access Protocol (LDAP), gopher or any other type of server.

The structure of FTP, LDAP and other protocols — that is, the sequence of commands and responses — is arbitrary. If you have the energy to read the standards documentation for protocols such as FTP and HTTP, you'll find that some of them are well-designed while others are horribly cobbled together.

The beauty of the TCP/IP protocol architecture is that implementing new protocols is straightforward. All a designer needs to do is define the commands and ensure that the client and server software agree on and understand the commands, responses and error messages, and their correct sequencing.

For more information, Gearhead recommends *TCP/IP Administration* by Craig Zacker, a fine and comprehensive tome.

Rocket to the socket at gb@gibbs.com.

Network World Fusion Spotlight

News, tips and tools from our Web site

Network crystal ball

Is an all-IP network possible? Will operating system choice become irrelevant as directories catch on? Will the government switch into overdrive with online regulations?

Keeping up with changes in networks is part of your job. Often, you have to be ahead of the curve, which means knowing how the industry will change.

We invite you to send in your predictions about the major shifts in the network market. Send your ideas to sgittlen@nww.com.

We'll take the best predictions and present them at our "Crystal Ball Panel: Peering into your networked future" session at NetWorld+Interop '99 Atlanta. Mark Gibbs, Dave Kearns, Jim Kobielus, David Rohde, Daniel Briere, Christine Heckart, Joel Snyder and Steve Blass will battle over their predictions as well as yours. The session will be held from 11 a.m. to 12:30 p.m., Sept. 15, Room 202E of the Georgia World Congress Center.

Out front in e-comm

News Editor Bob Brown this week tries to figure out which firm is leading in electronic commerce software. While it's clear that Cisco leads in the router market and Microsoft in software sales, picking the No. 1 e-commerce vendor isn't as crystal clear, he says.

If you're pinning your hopes on some start-up, you might be disappointed. Head online to find out who comes out on top around the Water Cooler.

DocFinder: 4230

Help Desk

Ever try installing NT Server without a CD-ROM drive? If you're like this week's Help Desk reader, you were probably frustrated. The reader gets stuck when he reboots the computer and it can't find the right drive.

Find out what Ron Nutter suggests.

DocFinder: 4231

Career Doctor

You're sitting in an interview and your prospective employer asks about your marital status. While the question seems innocent, Career Doctor Shaun Kelly says it violates federal and state laws. And you don't have to answer. Interviewers are barred from asking about religion, color, race, national origin, marital status, sex, sexual orientation or child-care arrangements, he says. This week, Kelly is available to answer your questions about what is and isn't legal in an interview.

DocFinder: 4232

MCI WorldCom's freeze

MCI WorldCom had a tough week. The merged firm is feeling what some are calling the effects of migration.

"It's frustrating to make sense of all that is happening with this world-class carrier," a reader wrote in our forum. "I don't think the company even considered a fallback plan before going ahead with the upgrade."

Learn the outcome and add your thoughts to our MCI WorldCom congestion forum.

DocFinder: 4233

Help Desk

Ron Nutter is standing by to answer your network questions. Read his column every week on Fusion. DocFinder: 2450

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Editorial Insights

Intel inside — your network, that is

While it is fashionable in the venture capital community to talk about the "saturation" of the enterprise network market, or the slowing of innovation there, there's one big industry player that doesn't buy into the notion: Intel.

Under CEO Craig Barrett, Intel is quickly transforming itself from a microprocessor company into a beefy contender battling Cisco and 3Com in the market for mid-size and small corporate nets.

Although revenue from traditional microprocessors dominates Intel's balance sheet, there is a rapidly growing contribution from network products — from communications chips and server components, to adapter cards, routers, switches and remote access gear. As we report this week, the firm is bolstering its high-end offerings with a Gigabit data center switch and rolling out new routers for small offices.

Intel has an array of management tools and voice/data integration offerings. It is even branching out into services such as Web hosting.

Virtual private networks (VPN) are key for Intel. Also in this week's issue, we report that the firm will build on the technology it acquired with remote access pioneer Shiva to create integrated voice/data access devices that help companies carve out VPNs over the Internet or other networks.

Intel's design is to use its powerful brand name to dominate the network market. The company is also using its vast financial resources to make acquisitions that strengthen the attack, including the buyouts of Shiva and computer-telephony expert Dialogic, and deals for communications processor companies Level One Communications and Softcom Microsystems.

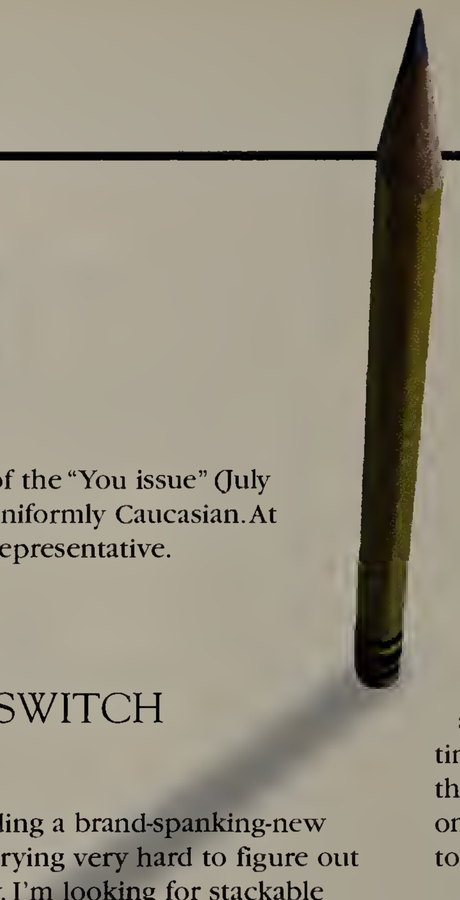
As one Intel executive stated in a recent meeting, "We want to be the building block supplier to the Internet economy." Put otherwise, Intel will sell all kinds of picks and shovels to the companies getting in on the Internet gold rush.

Intel is not likely to challenge Cisco any time soon for the Internet core or Fortune 100 nets. But Intel is the strongest challenge to Cisco for the rest of the network world. 3Com wrestles with organizational and focus issues that Cisco, with its own powerhouse brand, will exploit.

One wild card here is Hewlett-Packard. Networking has always seemed an also-ran within HP, although the firm has gotten more aggressive on price in the switching market. If new CEO Carly Fiorina sets her mind to networking, we could see a delightful donnybrook among HP, Cisco and Intel in the new millennium.

— John Gallant

jgallant@nww.com



Message Queue

YOU WHO?

Judging by the cover of the "You issue" (July 26), your readers are uniformly Caucasian. At least there's a female representative.

Kalpna Patel
Stamford, Conn.

ATTENTION SWITCH VENDORS

As an IS manager building a brand-spanking-new network, I have been trying very hard to figure out which switches to buy. I'm looking for stackable 10/100 switches that will handle the traffic layout I have. And I'm very interested in finding out how well Nortel Network's equipment will interoperate with Cisco's, for example.

In short, I need exactly what Kevin Tolly discusses in his column "Switch testing roll call: On board or AWOL?" (July 26, page 22). And his story is confirmation that what I'm looking for just isn't out there.

Add my vote to those asking vendors to go head to head. Vendors and buyers will be happier when buyers can put their hands on the right information to make the right choices.

Greg Owen
Manager of IS
SoftLock.com
Maynard, Mass.

GREAT EXPECTATIONS

I must respectfully disagree with Mark Gibbs' stance regarding Tom Johnson's court case against the various office supply and computer super stores ("Expecting too much from computers," July 19, page 78).

According to Gibbs' column, Johnson took the stores to court because the clerks couldn't provide Y2K information for the products they sell. Gibbs then compares this to John Q. Public's knowledge of the intricate details of a CD player and other such equipment. In this analogy, I think Gibbs misses something very important. Nowhere was it said that Johnson wanted the clerks to know all this information off the tops of their heads. Johnson also did not ask that the stores guarantee the equipment was going to work on Jan. 1, 2000 at 00:00:01. He asked for information, which to me sounds like he's looking for statements from the software/hardware companies — the entities that should be providing this information.

Personally, I think that any company that claims to be expert at helping you find the system to fit your needs (a popular claim these days) should be able to find an answer to the most pertinent question facing computer owners, such as: "Is this piece of hardware/software Y2K-certified?" No one is asking them to do the testing, just to be able to provide the information that is readily available.

Believe it or not, not everyone in the world owns a computer quite yet. Those people don't have access to all the statements and Web pages we do. The company that is asking them to invest thousands of dollars in a piece of equipment should be able to do at least that much for them.

Now if Johnson is asking the stores to guarantee the PCs and software are Y2K-compliant, that's another story.

Robert Kropiewnicki
Jefferson Township, N.J.

In his column "Expecting too much from computers," Mark Gibbs makes some pretty broad statements about software vendors concerning the reliability of the code they write. His statements are correct only if viewed in the context of an Intel-based, Microsoft-running world.

I've been programming for a number of years on IBM AS/400s. I would say that 99% of our program problems are identifiable, reproducible and repairable. This is true not only of the code we write in-house but also of that bought from other AS/400 software vendors.

On my desk I have an Intel-based PC and a 5250 dumb terminal; believe me, the PC is not there in case my terminal crashes. Blame Intel, blame Microsoft, but don't blame the industry.

Mark Boyer
Programming and development manager
Riviera Hotel & Casino
Las Vegas

Send letters to nwnews@nww.com or John Gallant, editorial director, Network World, *161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.*

More Online

- More letters about expecting too much from computers.

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COULDN'T YOU HEAR THE SOUNDS OF THE SEA?
YEAH. BUT THEN MICROSOFT BROKE IN WITH AN INSTANT MESSAGE.

Bottom Line . Joel Snyder

AVOIDING TECHNICAL-SUPPORT HELL IN FIVE EASY STEPS

I have been through technical-support hell — and barely lived to tell about it.

I recently worked on a project that involved 26 telecom companies, including ISPs, regional Bell operating companies and competitive local exchange carriers. My responsibilities included working with the technical support team at each company to solve a mail server configuration problem. Each contact started from ground zero: "Hello there, can you transfer me to technical support?"

Anecdotes from this project could fill an entire column — like the guy who insisted he couldn't pass my call to someone with a brain until I had shut down my computer, turned off the power, rebooted the system and reproduced the problem. But instead of whining about how poor the technical support at these service providers is, I'll offer some suggestions about how to avoid support problems.

First, test out technical support before you enter into a service contract. Call support and ask a tough question, one a front-line person can't answer. See how long it takes to get the question answered, and how seriously they take your call.

Second, avoid big companies. The larger the business, the more customers it has, and the worse the technical support is. Well, that's not always true — you can get a Ph.D.-level answer from Cisco, for example, 24 hours a day. But with huge telecom companies working on paper-thin margins, good technical support is a luxury they can't provide. Look at it from America Online's perspective: lose a couple thousand complainers and you've still got 12 million customers. In the world of telecommunications services, small, mobile and efficient beats out large and well-funded for quality of service almost every time. When it comes to support, my experience is that the worst of the worst are the biggest of the big.

Third, forget about building support response times into your contract. It's not going to help. Support is either good or bad. Putting some penalty or other clause into a service contract — if you can get it through, which you probably can't — doesn't change the basics of the business. Companies that are serious about good support are there for you. And companies that aren't won't change just because a salesperson puts some words in a contract.

Fourth, look for vendors that offer a priority-support service. If they have one, it means they have thought about their support offerings. Separating out folks who need high-end support is one way to keep quality up. You will probably have to pay more to get access to those priority-support people, but it's almost always worth it.

Fifth, use your personal network. Coming in the front door of a company asking for technical support may work, but it's not nearly as effective as identifying the person who can solve the problem and calling or e-mailing him directly. It pays to participate in technical mailing lists and news groups where the people who know things hang out. When you have a problem they can solve, you may have an inside contact.

Snyder, a Network World Test Alliance partner, is a senior partner at Opus One in Tucson, Ariz. He can be reached at jms@opus1.com.

Reality Check . Thomas Nolle

IS THIS FINALLY THE YEAR OF DSL?

It seems like years since we first heard about how various flavors of digital subscriber line technology were going to revolutionize Internet access. Actually, it has been years. But now, the recent deal between America Online and three major regional Bell operating companies indicates that DSL finally may be poised to come into its own.

Earlier this year, the Federal Communications Commission closed some of the loopholes the RBOCs had been using to delay competitive local exchange carrier deployment of DSL. By the end of the year, the FCC is expected to introduce some new DSL deployment rules for the RBOCs. The combination will eliminate most of the regulatory uncertainty that has suppressed DSL. And because cable modems, the archrivals of DSL, have been gaining acceptance, it's likely that all types of potential DSL providers will move quickly to recover lost ground.

The recently announced pact between AOL and RBOCs Ameritech, Bell Atlantic and SBC is surely a reaction to the recent regulatory trends. However, it also raises a question about DSL: the technology may be wonderful for consumers, but can DSL pay its own way in the marketplace?

Three years ago, AOL was the poor stepchild of the Internet, the company everybody said was going to be pushed aside by the new wave of open Web clients and the explosion of new ISPs. Now AOL is about the only ISP that can be called successful, and the closest thing the Internet has to a blue chip stock. Why? Because AOL can draw on advertising revenue and retail sales.

More ISPs have been the victims, rather than the beneficiaries, of the Internet's success. Their traffic grows daily as more people visit those neat e-commerce and auction sites, but their revenues don't grow much at all. AOL is the exception. That's why AOL can step forward to push the market toward realizing the goal of always-on, high-speed Internet access through DSL.

Most people want to believe DSL will eventually sell for about what premium Internet service goes for today, perhaps $30 per month. Logic says that if ISPs aren't reaping a profit selling 28.8K bit/sec services for $30, they probably won't find selling DSL at megabits per month for the same price very profitable, either. However, an always-on digital pipe to premium consumers ought to be exploitable as a marketing channel: a set of digital strings to make the consumer dance like a puppet to the merchandisers' tunes. To exploit this pipe, ISPs must be able to control their customers' graphical user interfaces to the point where they can be used to present retail offers and ads. AOL can do just that.

This isn't to say that the only road to DSL reality is paved with a zillion unwanted ads. What AOL is teaching us is that when a network service is offered at a fixed price per month, something must be added to it to generate additional revenue to offset increased usage. Traffic costs money to transport, no matter what the free-bandwidth advocates say.

DSL providers will be searching for DSL revenue sources, to be sure. Bell Atlantic, for example, has also launched a menu of DSL service offerings targeted at small businesses. DSL will likely be the focus of some of the application hosting offerings, given the fact that small businesses are somewhat more likely to be consumers of application hosting than their giant-corporation partners.

AOL's partners are speculating that total DSL penetration could exceed 30 million households within two years, and AOL says its partners could potentially cover about 55 million households. So will DSL explode, as providers seem to be promising? Probably not in the near term. The press releases on the AOL deals often contain the qualification that they include "forward-looking statements." In other words, they're hype.

Nevertheless, it's clear that DSL is now gaining momentum, and that at least some Internet users can expect DSL-based access at 768K bit/sec for only about $20 more than standard modem access. What remains to be seen is how much of that 768K bit/sec will really be available. An admittedly small and unscientific poll I conducted of cable modem users in mature service areas shows an effective Internet rate of only 72K bit/sec.

Will DSL do better, and if not, will users value small performance gains (and the benefits of always-on Internet) enough to justify even the modest cost increase?

What's important now is that it looks like we'll finally get enough DSL experience to judge its real potential.

Nolle is president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He can be reached at (856) 753-0004 or tnolle@cimicorp.com

STRETCHING your network BUDGET

BY NEAL WEINBERG

Getting more bang for the buck is the goal of every network executive. But who has time to investigate every new technology or entertain all the vendors, service providers and consultants who come knocking?

Don't worry — we've done the legwork for you. We've interviewed dozens of your peers, talked to experts from the consulting world and come up with a combination of practical advice and real-world experiences that should help in your cost-cutting quest.

While the tactics and tools may vary, there are five main strategies or principles that guide the most successful budget stretchers. They are:

1 **CONSOLIDATE.** *Three-quarters of a typical LAN budget and nearly half of a typical WAN budget are devoured by staff costs, according to Gartner Group. Anything you can consolidate — call centers, servers, management consoles — should result in staff savings.*

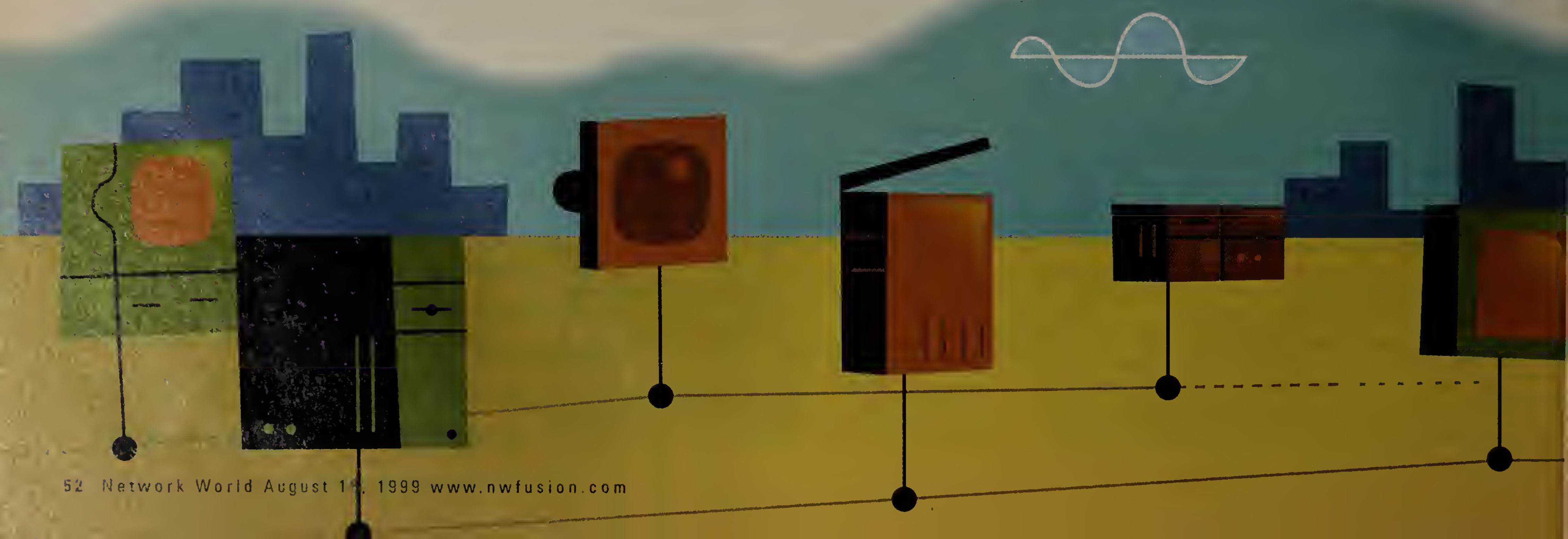
2 **STANDARDIZE.** *Complexity is your enemy. Simplicity is your friend. Try to impose a single enterprisewide standard for e-mail platforms, LAN protocols, network hardware and remote access systems. Standardization makes everything easier, including training, maintenance and upgrades. And let's not forget the volume discounts you can extract from vendors.*

3 **AUTOMATE.** *If there's a tool out there that can automate a process you're currently doing manually, anything from configuring IP addresses to distributing software to keeping an eye out for network outages, it's a safe bet that such a tool will save you money.*

4 **NEGOTIATE.** *You're trained as a technologist, not as a lawyer, but it's vital that you drive a hard bargain with vendors. That means never automatically re-upping at the end of a contract, no matter how wonderful the product and support have been. Put together a request for proposal (RFP), solicit bids from multiple vendors, drive a hard bargain, demand specific performance levels and include penalties for noncompliance.*

5 **DELEGATE.** *Sometimes it's hard to give up control of a part of your network to an outsider, but if you're facing staff, skill or time shortages, it might be easier and less expensive to go with an outsourcer who specializes in providing the services that you're looking for.*

Of course, these budget stretching techniques are not mutually exclusive. Most executives will use a combination of approaches to get their money to work harder for them.



CONSOLIDATE

Server consolidation brings million-dollar savings

Raymond Neff, vice president of IS at Case Western Reserve University in Cleveland, has slashed about a million dollars from his $21 million operating budget by analyzing his ongoing expenses, challenging his primary vendor and consolidating 80 servers into an existing mainframe and two support servers.

Before Neff went on his cost-cutting binge, the university had a standard setup: Large administrative and academic departments each had their own NetWare servers, while smaller departments shared a server. The servers provided backup storage of desktop files and controlled printing functions.

There were 15 network administrators keeping the 80 servers humming and the 6,000 faculty members and administrators happy. Neff says there was just one problem: "It was ruinously expensive."

He calculated that maintenance costs were $250 per end user, per year. Neff decided that something had to change, and it was up to his primary vendor to come up with a solution.

Raymond Neff, vice president of IS at Case Western University in Cleveland, saved the school about $1 million by consolidating servers.

FRANK SCHWELIK/MPG

"I challenged IBM to propose something where we could get some degree of consolidation," Neff says. IBM responded with a plan to store the files from those 6,000 desktops on an existing mainframe, rather than on the distributed servers. "The concept is that you're taking data files off the desktop systems and storing them for backup purposes and archival purposes on the mainframe," Neff says.

Newer files are queued on disks and older files are moved onto tape. If an end user requests a file, the system tracks down what disk or tape the file is on, makes a copy and sends it to the desktop, Neff says. And that's all done automatically through a robotic tape library system that's also a budget stretcher.

The bottom line: Through a combination of attrition and network managers who were retrained and promoted to other jobs, Neff was able to eliminate all but two net administrator positions and reduce his operating cost per end user from $250 to $40.

The 80 small servers have been reused or recycled. End users may have to wait up to 5 minutes for a print job, but they enjoy the reliability of the system and the peace of mind from knowing their files are safely backed up.

Neff says consolidation is the way to go: "We see it as a tremendous labor savings. There are less things to break. And you run yourself ragged keeping 80 little boxes going."

Similarly, Stephen King's server consolidation tale is anything but a horror story. King, enterprise integration manager at Convergys in Cincinnati, bought one Sun Enterprise10000 server, a data center box that scales to 64 processors. He used the Enterprise10000 to replace eight large NCR Unix servers that were running the company's main call center application and 13 Sun servers that were running Oracle applications.

King scrapped the NCR servers, thereby saving the more than $300,000 he was paying NCR per year for maintenance. And he was able to cut one Unix administrator position, resulting in an additional $100,000 in savings. By redeploying the Sun servers, King avoided having to buy additional servers to accommodate growth, and he even saves $14,000 per year in floor space and power by having a single box instead of 21 separate machines.

Of course, King did invest about $1.5 million in the new Enterprise10000 server and associated peripherals. But he figures the cost savings plus the cost avoidance pretty much equal his expenditures. The final twist is that the additional capacity from the new server has easily handled the growth of the company's call center from 600 to 1,200 agents. The way King tells the tale: "The consolidation paid for me to double my capacity."

Joe Middleton is putting up some Hall of Fame numbers as vice president of system support at Bassett Healthcare, which has 21 health centers in upstate New York. At one time, Bassett had seven call centers and four separate networks, not to mention just about every LAN protocol under the sun. Network management costs were spiraling out of control, rising more than 12% per year.

Then Middleton stepped up to the plate. He consolidated the seven call centers into one facility in Cooperstown, N.Y., and consolidated the voice, data, video and facilities management networks into a single private frame relay network and standardized on IP.

Switching from 37 56K bit/sec leased lines to frame relay for data traffic was a key money saver. Creating a single call center allowed Middleton to reap significant savings in personnel costs and phone charges. And by running voice from his rural outposts over frame relay links, he is avoiding the high inter-local access and transport area rates he was paying to small private phone companies.

He estimates his total savings on voice and data at more than $600,000 per year — and he's not done. The next step is the leap from frame relay to a private ATM network. Middleton anticipates that moving from multiple T-1 frame relay links to a single ATM OC-3 will result in lower maintenance costs, improve operating efficiency and allow new video-based telemedicine applications that will save on travel costs.

STANDARDIZE

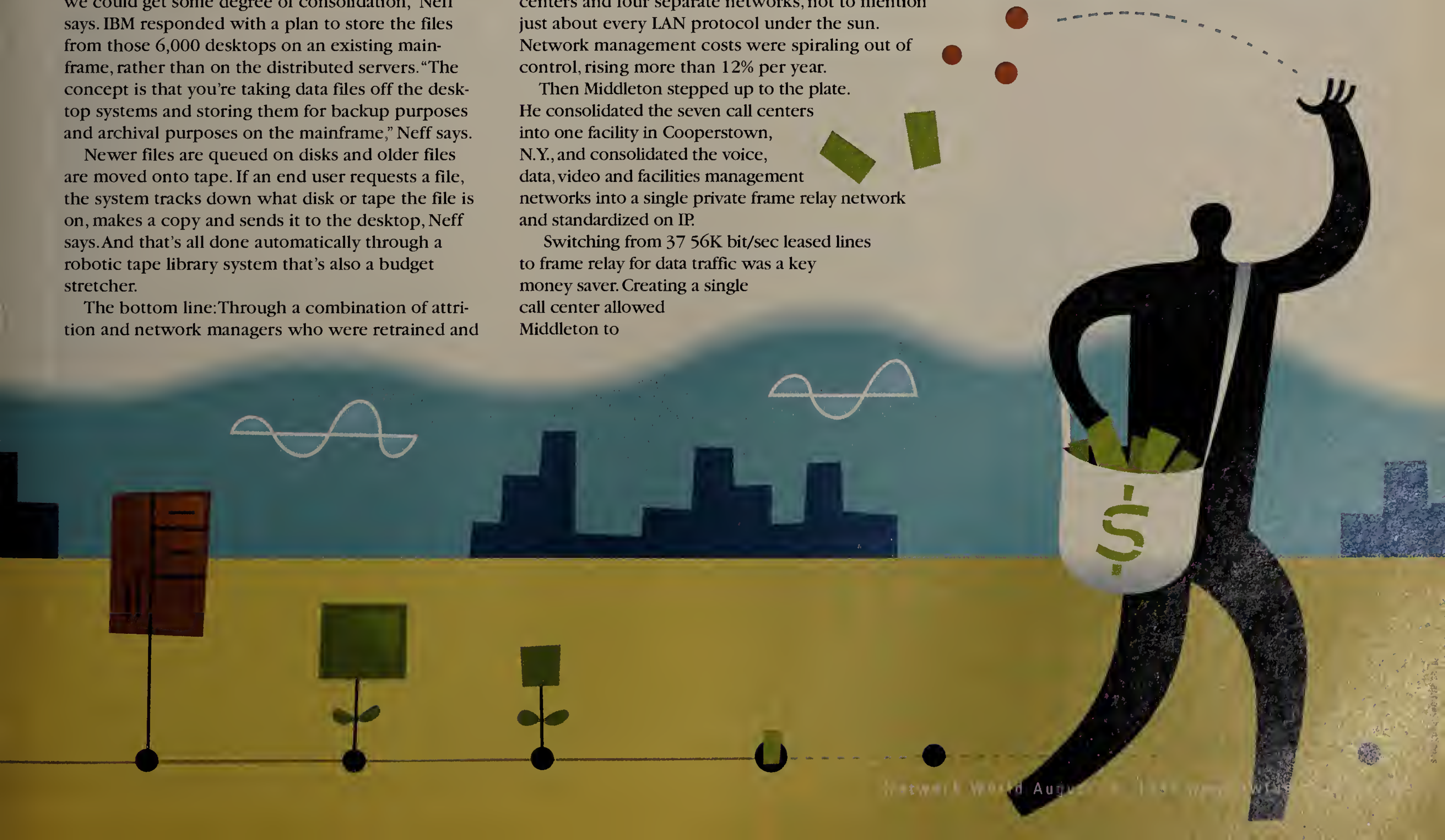
Setting standards makes life easier

Fred Tippins, director of desktop strategy in the IT group at Motorola's semiconductor division in Phoenix, has to upgrade software several times a year on 20,000 desktops scattered all over the world. The cost to do this manually gets "fairly large fairly quickly," Tippins says.

"We needed to find better ways to manage that desktop environment," he says. What Tippins came up with was a strategy based on standardizing the desktops and automating the updating process as much as possible.

The first step was to define a global standard for software to replace the patchwork that had grown up over the years. For example, Tippins, whose 20,000 desktops are split just about evenly between Macintoshes and Windows-based PCs, decided to standardize on e-mail from Netscape and Microsoft's Office 2000.

Then he selected automated software distribution and management software from Novadigm. After installing a Novadigm client on each desktop, a central server can remotely update software, add or



remove applications, scan desktop programs to spot variations and even fix problems. For example, if an end user accidentally deletes a key file, or if a file is corrupted, the monitoring system will recognize the problem and replace the file.

Tippins says the server automatically scans each desktop in the wee hours of the morning, looking for variations from the "desired state" for each particular machine.

The software also provides key information to help Tippins with asset management, tracks software license compliance and can even distribute the latest virus protection software.

Tippins says he doesn't have a dollar figure for what the standardization and automation moves will save his department as he moves from the planning to implementation stages, but he does know this: "We will be able to assign some people who are occupied with manual processes now to areas that are more strategic for us, so we will get a net productivity gain."

In the same vein, Mary Lu Steube, operations director for data communications at Alegent Health in Omaha, Neb., has automated software distribution and desktop management with Novell's ZENworks, not so much to reduce staff, but to keep pace with growing demands on existing employees.

With rural hospitals and clinics scattered across Nebraska and into Iowa, Steube's six network administrators and 12 desktop analysts were putting in for a ton of what she calls "windshield time" — time spent driving to these locations.

By piggybacking the ZENworks rollout with a previously scheduled desktop hardware upgrade for Year 2000, she was able to standardize hardware and software on 3,500 desktops "in one big swoop."

ZENworks has provided several money-stretching features: Steube can install software remotely; lock down desktops so rogue users can't add software; and take control of an end user's desktop and fix a problem remotely.

AUTOMATE

Using automation to chip away at network costs

Jeff Mersberger, systems engineer at the Frito-Lay division of PepsiCo in Plano, Texas, is using Dynamic Host Configuration Protocol (DHCP) software to automate the task of assigning IP addresses and he's exploring caching products to stretch his existing WAN bandwidth.

Mersberger says he's responsible for more than 3,400 desktops at 320 remote field sites, distribution centers and plants across the country. It used to be that every time someone moved to a new address, his team had to manually reconfigure the machine in order to map the IP address to the right subnet. He set up two DHCP servers that now handle that task automatically. "It saves us a lot of administrative overhead," he says.

Mersberger is now looking into caching software to improve WAN performance at his remote sites, most of which are served by pipes that range in size from 56K to 512K bit/sec. He's also looking into reverse caching, which involves placing a cache between the company's Web server and the Internet so frequently accessed Web pages from the company's Web site will be available faster.

Mark Nash, team leader of network systems at HealthNow New York, a health insurance provider in Buffalo, is stretching his budget through a variety of consolidation and automation initiatives.

On the WAN side, he consolidated voice, video and data onto an ATM network. Putting video on the net allowed him to eliminate $2,000 per month in ISDN charges. Adding voice saved him $12,000 per month by letting him pull the plug on four PBX interconnect lines that linked his call centers.

And he is taking full advantage of ATM's ability to prioritize traffic. Nash says his company used to buy enough bandwidth to accommodate peak traffic, which was 45M bit/sec. But he analyzed that traffic and determined that only 20M bit/sec was mission-critical.

So Nash slashed his bandwidth requirements accordingly and used his ATM switch's quality-of-service capabilities to ensure that the important traffic got through. The move is saving him $18,000 per month in WAN charges.

On the LAN side, Nash consolidated a "smorgasbord of protocols" into two — IP and SNA. This has made it easier for his team to manage the network. Nash moved from expensive Layer 3 switches to Layer 2 multiprotocol switches, which reduced his per-port costs from $600 to $150.

In addition, he flattened the network and reduced the number of subnets from six to three, simplifying network tuning and management.

Finally, Nash is using IBM's network management software to install software on remote PCs. The software wakes up the PC and loads whatever is needed: for example, a new operating system or new applications.

Nash says he has been able to increase the number of desktops he handles from 1,000 to 2,500 while keeping a lid on new hires. His help desk consists of 10 people for 2,500 desktops, for a ratio of 1-to-250.

Automated file storage and recovery is another way to save money. Rick Mickool, chief information officer at Babson College in Wellesley, Mass., is in the process of replacing more than 800 Compaq PCs used by faculty and administrators with Dell PCs. He needed an efficient way to store the data from the old machines and install the files on the new machines in a way that was transparent to the end user.

Mickool found a tool called Connected Network Backup from Connected Corp. Connected Network Backup automatically saves and compresses copies

BUDGET STRETCHING BY THE NUMBERS

Analysts weigh in with their top tips.

Tom Nolle, president, CIMI Corp.

1. Migrate from leased lines to any of the 'virtual' services: frame relay, ATM or virtual private network.
2. If your frame relay traffic consists mostly of data files that are being copied and sent back and forth between headquarters and branch offices, consider sending the files as e-mail attachments over the Internet. Then reduce your frame relay bandwidth.
3. Perform a risk analysis and determine whether you really need all those expensive backup systems that never get used.

Jennifer Pigg, senior vice president, data communications, The Yankee Group

1. Perform an audit of all private lines to determine which ones you've been paying for that haven't been carrying any traffic.
2. Switch from a private to a public data network.
3. Consolidate WAN data networks onto a single technology.
4. Consolidate WAN access, putting data, voice and Internet access onto a single circuit-switched connection.
5. Implement an Internet fax server.
6. Design a service-level agreement that meets your requirements, and make sure your carrier is complying. Determine what compensation is due your organization for missed goals.
7. Investigate low-cost, remote-manageable WAN access hardware devices, such as frame relay access devices, Integrated Access Devices and enhanced DSU/CSUs.

Laura DiDio, senior analyst, Giga Group

1. Become a beta tester; you'll get your hands on the newest technology ahead of your competitors and get good deals on the products.
2. Reduce labor costs by hiring college or even high school whiz kids.
3. Don't be afraid to barter for goods or services.
4. Send your staffers to get trained on the latest technologies; it's more cost effective than trying to go out and hire new people.
5. Do your homework and find out the street price for products before you talk to your vendor's sales representative.
6. Get tough when it comes to negotiating with vendors. Write up a wish list of items you want the vendor to throw in, such as free onsite tech support; determine what you want to pay for the contract; and challenge the vendors to meet your demands.

— Neal Weinberg

ILLUSTRATIONS: DOUG ROSS

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Maureen Sullivan's negotiating techniques give vendors the blues.

ALLEN KLEHR/MPG

of files and applications on the original machine and puts them on the new machine.

Halfway through the process, Mickool says he has replaced 418 machines and backed up a total of 768G bytes of data. But the compression features of the Connected tool have reduced the storage requirements to 90G bytes, saving Mickool an estimated $100,000 in disk costs.

Not only that, Mickool plans to keep the system up and running once the school year begins and use it for automatic file backup and recovery.

NEGOTIATE

Nice guys finish last in contract negotiations

If you haven't done the proper preparation and you find yourself going one on one with a vendor sales representative in a high-level negotiation involving millions of dollars, just remember one thing: Your odds of getting the best of the deal are about as slim as Calista Flockhart.

The vendor sales representative is a highly trained, experienced professional who knows all the tricks of the trade. You know technology, but you've probably never been trained in negotiating and procurement techniques.

The talks can become "a total mismatch," in which the technical person ends up "unknowingly giving away the farm," says Marlene Bauer, area director for International Computer Negotiations, a consulting firm in Winter Park, Fla.

But there are things you can do to level the playing field, Bauer says. First, scour your files, check old storage closets and make sure you don't have active software licenses or hardware maintenance contracts on products that you're no longer using.

Next, do the time-consuming but vital task of detailing exactly what you want to buy from the vendor, in as much detail as possible. Break things down to exact specifications of the products you want, the types of warranties you want and the protections you desire.

For example, everybody wants their vendor to support the products, but what level of support do you want, and what level are you willing to pay for? Will you settle for simply calling a vendor's support line, or do want the pager number of a particular support person assigned to your network. In case of a serious problem, do you want the vendor to send a support person with 24 hours or within two hours? All of that has to be thought through and included in a detailed RFP, Bauer says.

Once the vendors respond to the RFP, Bauer recommends that you conduct a bidders conference, in which you invite all of the bidders to physically appear at a certain location. Call them into a room, one by one, and grill them.

Bauer says there's nothing like competition to drive prices down. "You'd be amazed at what kind of deals you can get," she says.

Maureen Sullivan, senior vice president of strategic service for the national Blue Cross and Blue Shield Association, was very happy with the long-distance voice, wireless and frame relay service that AT&T was providing. But by consolidating the business of the 51 independent member companies in the Blue Cross and Blue Shield network, she was able to put together a large enough contract to attract all the major carriers and score a significant volume discount.

Toward the end of the three-year contract, long-distance voice prices had fallen so much that Sullivan didn't think she was getting much of a bargain anymore. So she hauled AT&T in and said she wanted to reopen the contract and renegotiate the price.

AT&T agreed to move the bidding process on the new contract ahead by six months. Even though Sullivan was satisfied with AT&T's performance under the contract, she didn't cut them any slack. She brought in a consultant to analyze comparable customers and the rates they were able to negotiate. "We do our homework before the RFP process," Sullivan says.

Then RFPs went out and vendors were screened on a number of factors, including their capacity to handle the bid and their prices. Each vendor had to run a proverbial gauntlet because Sullivan organized a session in which the vendors made presentations in front of 20 telecom managers from the various Blues.

Once the field was narrowed to a select few, the negotiations really heated up as Sullivan played the vendors off each other. "Our sense is that the competition is so intense, we are in a strong position to extract value," she says.

In the end, the Blues signed a three-year, $270 million contract with AT&T, but Sullivan says the process saved each of the individual companies a significant amount of money.

DELEGATE

Outsourcing offers new lease on your network

With all that network executives are being asked to provide these days it's no wonder people are turning to outsourcers. And outsourcing doesn't mean handing over your entire network to an outsider — it means you can select a particular task and hire someone to handle it for you.

Barron Wright, network services manager at Saxton Mortgage, says outsourcing is helping him stretch his budget. When the company began expanding rapidly Wright realized his department didn't have the necessary skills to manage a WAN.

So Wright put his WAN in the hands of NetSolve, an Austin, Texas, company that specializes in remote network management. NetSolve came up with recommendations on how much bandwidth Wright would need as he connected each new sales office. NetSolve installs and configures the frame relay access devices at the offices and provides round-the-clock, real-time network management.

"If there's an outage in Denver, they notify us," Wright says. NetSolve describes the problem and gives Wright an estimate for when the appropriate carrier is expected to have the problem fixed.

With 14 offices scattered across the country, Wright says he would be at a loss to track the source of a problem on his own. But NetSolve "seems to have quick channels into the carriers," he says.

For example, one of the links Wright set up before NetSolve came on board — an MCI WorldCom frame relay link from his Richmond, Va., headquarters to a branch office in Ft. Worth, Texas — would mysteriously go down several times a day. Wright was unable to get to the root of the problem. But NetSolve was able to press the carrier to focus on the problem that, it turned out, had to do with the local loop. Once the regional Bell operating company installed some new copper, the problem disappeared.

Wright says he also likes NetSolve's Web-based reporting system, which allows him to log on to the NetSolve site, track his trouble tickets and view performance reports on his network.

Wright says he pays NetSolve $30,000 per year for the service, and he estimates that it would have cost him close to $120,000 if he had to hire a full-time person to manage the frame relay network. ◪

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If you're looking for the eBay of network equipment, check out www.ITParade.com, a Web site that lists more than 100,000 used and remanufactured items, including net gear from network interface cards to high-end Cisco routers.

Robert Davie, chairman of ITParade, says the total value of the products available on the site is more than $60 million. ITParade gets its inventory from the major IT resellers and remanufacturers, as well as from major companies that want to sell off their surplus inventory. Davie estimates that buyers can score savings of between 40% and 80% off list price.

ILLUSTRATIONS DOUG ROSS

Heavy-lifting help for your Active Directory move

Aelita's Enterprise Suite tops our list of NT domain migration tools.

BY DENNIS WILLIAMS,
NETWORK WORLD TEST ALLIANCE

Windows 2000 and its brand-new Active Directory are on their way into your network. While Active Directory offers many of the benefits of a real directory service, it requires a change in philosophy and a potentially stressful migration of your existing domains.

Microsoft will eventually offer tools to help users through this migration process. However, these utilities will not be integrated into Windows 2000 in time for its initial release, now set for sometime in October.

Fortunately, there are several tools already on the market that can help you plan for and pull off the transition as smoothly — and with as few surprises — as possible. All the tools we reviewed address three different processes in the migration: the clean up of existing NT 4.0 domains by removing nonexistent, expired and redundant user names, accounts and objects; the consolidation of multiple NT 4.0 domains into a single domain; and the migration itself. In addition, some tools provide a reliable mechanism to roll back the entire process if necessary.

Aelita Software Group's Enterprise Suite won our Blue Ribbon Award because it offers the cleanest, most complete migration and provides extensive undo options. Mission Critical Software's OnePoint Domain Administrator — parts of which Microsoft has licensed to include in subsequent versions of Windows 2000 — did nearly as well, but its ability to clean up domains and its management interface fell short of Aelita's suite. FastLane Technologies' DM/Suite was a solid, well-rounded product, but we felt it was slightly less polished than its competitors.

We also beta-tested a feature-incomplete version of Entevo's DirectManage (see Fusion, DocFinder: 4224). Once complete, we expect this product will offer some unique features, such as the ability to migrate from one Windows 2000 server to another, offering users a way to make changes to their Active Directory configurations.

Best of the lot: Aelita's Enterprise Suite

Aelita's Enterprise Suite won our confidence as the product we would choose to migrate our NT domains to Active Directory. There are seven separate tools in this NT management suite, but those directly related to domain migration are Virtuosity, Domain Migration Wizard and Delegation Manager.

Virtuosity is a database-driven management utility that comprises comprehensive auditing, reporting and domain clean-up tools.

The auditing tool is part of the Journal feature that is used for analyzing database content and creating reports. Not only can you view reports using this utility, but you can also initiate corrective actions from the on-screen report itself.

The reporting tool uses information stored in the database to display user, security and network information. It incorporates a security analyzer feature that checks account policies, lists users with administrative privileges, shows inappropriate names and performs other similar tasks.

The domain clean-up tool allows you to modify users, groups, access permissions and file shares. You can make these changes to individual user accounts or en masse. Virtuosity also lets you backup and restore information about local and global users in a domain, including file access permissions. This way, if any information is lost, configured incorrectly or corrupted, it can be restored to its original state quickly and easily.

The second component of Enterprise Suite, Domain Migration Wizard, helps move you from a multidomain structure to a single domain — a good first step in the process of moving to Active Directory. It automates the migration of users, groups and accounts. The wizard first scans the network and lets you select from a discovered list of source and target domains. It then collects user and group information from the domains and stores it in a database. You select which users and groups you want transferred from the source domain to the target. The wizard scans for duplicate user and group names and lets you rename or replace redundant names. It then applies the modifications. Though this process changes the actual domain, you can still undo the changes with a click of the mouse.

Domain Migration Wizard also lets you create an Active Directory structure and test it in a controlled environment. It is a helpful tool to test different Active Directory structures, such as directory organization by geography or business function (marketing, sales, engineering and others). Domain Migration Wizard tracks the migration process and because it is database-driven, lets you roll back to a previous point so you can modify your configuration and try again.

Product: Enterprise Suite

Vendor: Aelita Software Group

With a complete set of migration utilities and the ability to back out of any part of the process of moving NT domains to Windows 2000 Active Directory, Aelita's Enterprise Suite captured our Blue Ribbon Award.

We tried several different scenarios and found that no matter how hastily or sloppily we created the target directory, we were able to migrate to it easily and back out of it just as easily.

Overall, we liked using Domain Migration Wizard because it took most of the apprehension out of migrating our directory and never left us wondering what to do next.

The third tool in Enterprise Suite, Delegation Manager, allows you to delegate administrative tasks on the network. This common initial step helps you prepare for migration. Even if you do not intend to fully migrate to Active Directory — where delegated administration is mandated — for some time, you can still get used to the new management approach on your NT 4.0 network. When you do decide to complete your migration, you will already have a distributed management plan in place.

Our only complaint about Enterprise Suite is that the different tools are not integrated, other than being linked to the same database. With no common interface, each tool is accessible from multiple, nested menu items.

OnePoint Domain Administrator

Despite Microsoft's decision to integrate some of Mission Critical's technology into its Windows 2000 base product, Mission Critical officials say they will continue selling all their OnePoint suite components as standalone products.

The Mission Critical product we

ScoreCard

	Clean-up tool 20%	Consolidation tool 20%	Migration tool 20%	Management 15%	Security 15%	Reporting 10%	Total score
Enterprise Suite	8	10	10	10	7	8	8.95
OnePoint Domain Administrator	7	10	10	7	7	10	8.50
DM/Suite	7	8	7	10	7	10	7.95

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score.**

examined for this review, OnePoint Domain Administrator 1.0, comprises the Windows 2000 OU Populator and Domain Migrator utilities. OnePoint Domain Administrator taps into your existing NT 4.0 domain model and allows you to test multiple Active Directory structures using company information without actually altering or affecting your domain. Once you decide how you want to structure your Active Directory, OnePoint Domain Administrator helps you begin the migration process.

You use OU Populator to set up an Active Directory tree structure on the existing NT 4.0 server. If you don't like that structure, you can modify it or start over — nothing's lost or changed on your network. OU Populator allowed us to use ActiveViews, templates for creating and populating Organizational Units in the Windows 2000 Active Directory. These groupings let us create entire Organizational Unit trees and sub-Organizational Units in the Active Directory hierarchy.

Additionally, this tool allowed us to run our NT 4.0 domain and our newly created Windows 2000 Active Directory in parallel with synchronized passwords. This makes it easier to "ease" into Active Directory rather than requiring that you pull the plug on the old system before the new one is up and running dependably.

The second component of the Mission Critical suite, Domain

Continued on page 60

NetResults

Enterprise Suite

Aelita Software Group
(800) 263-0036
www.aelita.com/products/Component.htm
$23,295 for 5,000 users

Pros

- ▲ Offers complete migration
- ▲ Provides strong undo capabilities, letting you back out of critical transactions

Con

- ▼ No integration of tools in suite

OnePoint Domain Administrator

Mission Critical Software
(888) 323-6768
www.missioncritical.com/product/default.htm
$27 per managed user

Pro

- ▲ Migrates NDS information as well as NT domain data
- ▲ Excellent performance

Con

- ▼ Domain clean-up tools need improvement

DM/Suite

FastLane Technologies
(800) 947-6752
www.fastlanetech.com/products/dmsuite/
$25 per managed user

Pros

- ▲ Strong reporting tools
- ▲ Easy-to-use Explorer-like interface

Cons

- ▼ Annoying screen pops up intermittently
- ▼ Lacks rollback feature

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Continued from page 58

Migrator, allows you to copy user accounts, groups and computer accounts to another domain or to your new Active Directory structure. This will help you resolve any file, directory or sharing issues encountered during domain consolidation.

A third utility that ships with the product, NetWare Migrator, offers Novell Directory Services (NDS) users tools for making the move to Active Directory. While we did not test this component because it went beyond the scope of our test, we think the tool is useful because it helps users resolve the directory fields between NDS and Active Directory. After migrating user accounts and groups, NetWare Migrator also allows you to copy files and directories, including the access permissions for each file and directory, from a NetWare server to a Windows NT server.

OnePoint Domain Administrator did not score as high as Aelita's Enterprise Suite, but it is a good set of tools.

FastLane's DM/Suite

Although it didn't make us feel like we were cruising the autobahn in a high-performance sports car, FastLane's DM/Suite did help us cruise through a few Active Directory traffic jams better than the average commuter. DM/Suite includes three primary applications: DM/Manager for domain consolidation; DM/Administrator for the delegation of administration tasks; and DM/Reporter for displaying security status and aiding in the enforcement of security policies.

All the products are installed separately and can be bought individually, and all are accessed individually under different folders in the menu. Nevertheless, they do comprise a suite — if you move users from one domain to another in DM/Manager, the change is reflected in DM/Administrator.

More **Online**

- **A review of Entevo DirectManage Suite 2.0.**
- **A complete list of the tools in Aelita's Enterprise Suite.**

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All products use an Explorer-like interface that shows source and target domains. This feature makes it easy to replicate user and group objects when working in DM/Manager, the domain consolidation and account migration application. This common interface makes it simple to move accounts among NT domains or from NT domains to Windows 2000 Active Directory. But the feature lacked the ability to easily undo or revert to the old domain structure, which Enterprise Suite and OnePoint Domain Administrator provided.

We tested DM/Manager to consolidate our NT 4.0 domains and found it easy to use and intuitive. However, once we had a consolidated domain, we found it hard to figure out how to migrate the data to Active Directory using DM/Suite's tools. The documentation provided revealed how to configure DM/Manager's rules-based approach to migration, but we found that

Continued on page 62

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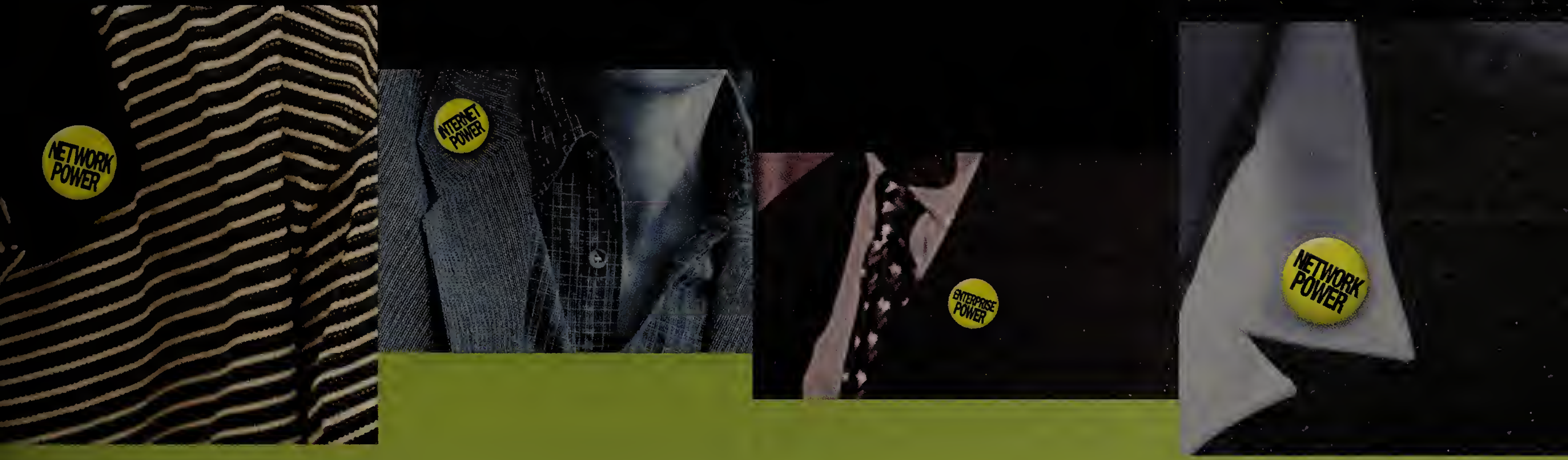

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Continued from page 60

this process is not as intuitive as the migration process of its competitors.

FastLane's DM/Manager currently moves users and groups from one domain into another pretty well, updating all access rights and computer resources so users have the same privileges they did before migration. Updated properties includes local group memberships, NT profiles and user rights. Though you can currently perform domain-to-Active Directory migrations, a new version of DM/Suite to be released at the end of September will make the process easier by better representing the hierarchical structure of an Active Directory domain.

DM/Administrator also allows for the delegation of administration. We used it to assign specific administrative rights based on Windows 2000's hierarchical structure. This ability provides badly needed granularity in the administration of NT networks and helps prepare selected users for new administrative roles.

DM/Reporter offers about 150 canned reports, making it easy to assess and audit your network. We found this tool convenient and fast; we were able to quickly and easily create user and group management and security assessments. You can generate any of the included reports just by clicking on one, or you can modify existing reports to suit your specific needs.

One minor annoyance is that DM/Suite's manager service flashes an update screen on the console at a regular interval, interrupting your work and train of thought. After placing a service call to FastLane, we learned you cannot suppress the service screen completely but you can schedule it to pop-up at more infrequent intervals.

Because Windows 2000 has not yet been officially released, third-party vendors trying to make the migration to that new operating system as easy as possible are aiming at a moving target. We kept that state of fluctuation in mind as we examined these products.

Nevertheless, in terms of what all three companies have right now, we would have to place our bets on Aelita's offering. Enterprise Suite stands slightly above the pack in terms of how it helps you clean up your NT 4.0 domains, how you structure Active Directory and how you eventually migrate your data. And just as important as what it does to help you move forward with your Active Directory migration, Enterprise Suite stands heads above its competition in terms of giving you a way to back out of any action that yields unexpected or undesirable results.

Williams is a freelance writer and product improvement consultant in Alpine, Utah. He can be reached at dennis@productreviews.com.

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Williams is also a member of the Network World Test Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Test Alliance information, including what it takes to become a member, go to www.nwfusion.com/alliance.

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Almost a 10

Dell PowerEdge 6350 combines great performance and design.

BY JOHN BASS,
NETWORK WORLD TEST ALLIANCE

Dell's PowerEdge 6350 earned 9.7 points out of a possible 10 on our ScoreCard, making it the best enterprise-class server we have tested to date. And it comes at a reasonable combined cost of $38,248 — $30,234 for the PowerEdge 6350 and $8,014 for the PowerVault 200S outboard storage system.

The rack-mountable PowerEdge 6350 outscored all servers that we have tested in the file, CPU and network tests, with 10s in the first two categories and 9 in the last.

Product: PowerEdge 6350
Vendor: Dell

Dell's PowerEdge 6350 is our best-performing server to date, shining in every area and excelling at file serving.

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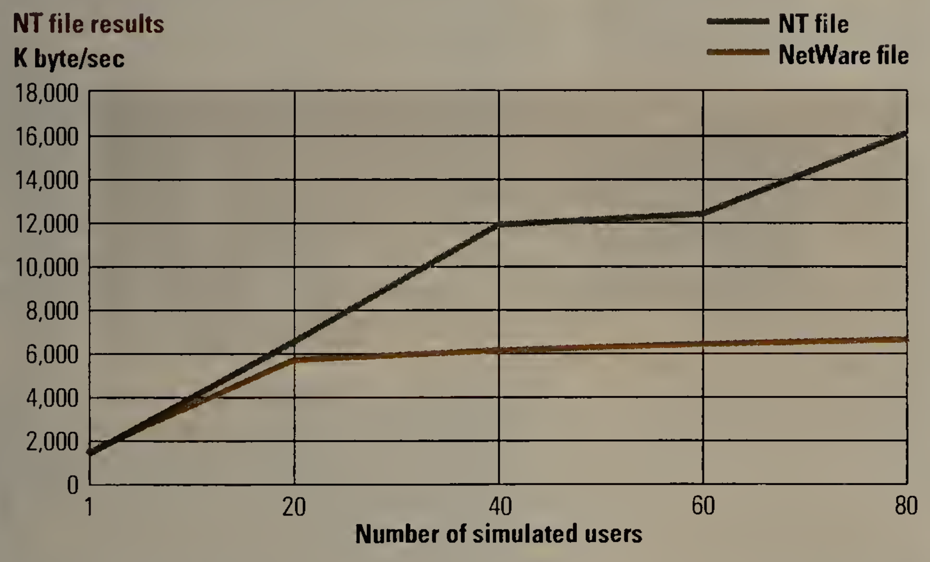
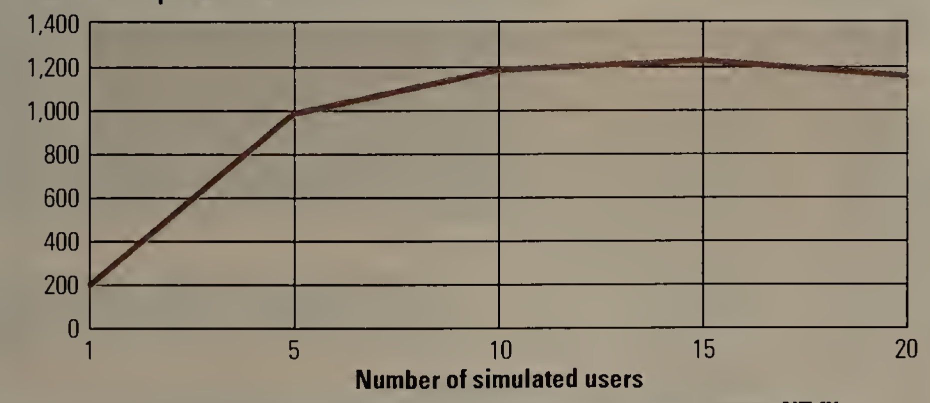
Feature and configuration table

Server	PowerEdge 6350
Vendor	Dell (800) 999-3355 www.dell.com/products/PowerEdge/pe6350/
Price	**Total $38,248:** PowerEdge 6350 $30,234; PowerVault 200S $8,014

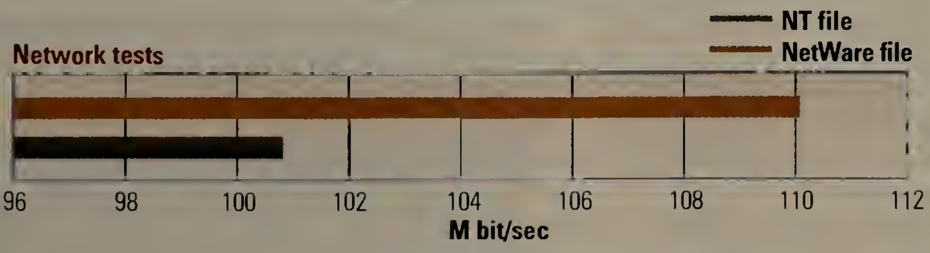
NT file results



Transactions per second



Network tests



While its CPU and network test results were barely higher than its closest competitors', the PowerEdge 6350 greatly outperformed the other servers in its class on our file tests. We attribute that to Dell's Ultra2 SCSI PowerEdge RAID Controller (PERC2), a 64-bit PCI card with 128M bytes of cache, which offers amazing performance.

The server was loaded with four 500-MHz Pentium III Xeon processors, 1G byte of memory, a four-channel PERC2, nine 9.1G-byte Ultra2 SCSI drives and four Intel Pro 100+ Fast Ethernet network interface cards (NIC). Its seven PCI slots were the most PCI slots of any server we've tested.

The outboard storage system, the PowerVault 200S, houses eight 1.6-inch drive slots. The number of SCSI cables connected to the PowerVault 200S's active backplane defines whether the server is configured for one or two SCSI channels. There are no switches to configure. The PowerVault 200S comes with two load-balancing redundant power supplies and three 2+1 redundant cooling units.

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The PowerEdge 6350 is extremely easy to service. It has a top entry case with three load-balancing, hot-swappable power supply units with 2+1 redundancy. Even with three power supplies, however, there is only one large power cable, keeping things tidy. All fans are loaded into a fan card that can be replaced from the top.

The front bezel has a lockable door, giving access to the disk drive, CD-ROM, power switches and three 1-inch Single Connection Attach (SCA) drive slots. A lock on the front, which is hidden by the Dell badge, secures the front bezel and top of the server.

ScoreCard

Dell PowerEdge 6350

Total score	9.7
Overall performance (40%)	9.7
Features and flexibility (30%)	10
Manageability (20%)	9
Serviceability (10%)	10

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score.** The World Class Award goes to products that earn 9.0 or above on our Scorecard.

The server was configured with two partitions. The operating system partition was on a 9.1G-byte disk in the PowerEdge 6350, while the data partition spanned the eight drives in the PowerVault 200S. The data array was configured as RAID 0 stripe set using the PERC2 array controller. The NICs were configured for full-duplex Fast Ethernet operation.

Manageability is another strong suit for this server. Not only does Dell cover integration with the major enterprise products via Dell OpenConnect, it also provides an optional remote management card and easy-to-use proprietary management software called Dell OpenManage IT Assistant.

The only thing that kept the Dell device from getting a 10 for manageability was lack of support for a full hot-pluggable PCI feature set. Though hardware support is in place, Dell doesn't yet supply hot-swappable PCI drivers for all its supported I/O cards.

Server testing is performed at North Carolina State University's Centennial Networking Labs (CNL) in Raleigh, N.C. CNL tests network equipment and network-attached devices for interoperability and performance. Bass is a senior technical staff member at CNL who designs and leads the execution of the test suites. He can be reached at john_bass@ncsu.edu.

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Management Strategies

Career Development, Project Management, Business Justification

Boomerang employees

In tight labor market, recruiting former IT staffers is good for business and good for corporate morale.

BY TONY KONTZER

MIKE KASON

InFocus Systems hasn't become one of the best-regarded employers in Oregon by showing departing employees the door upon their decisions to leave. If anything, the Portland manufacturer of LCD computer projectors coddles such employees.

So when a valued IT staffer seemed bittersweet about his departure during a recent exit interview, Rebecca Lynch-Wilmot, InFocus' director of employee learning and development, didn't let the opportunity to plant a warm and fuzzy notion pass.

"I made it clear to him that if he got to his new employer and felt any misgivings, we would reinstate him and give him his seniority back," recalls Lynch-Wilmot.

Just two weeks later, the employee was back on the job at InFocus.

On the surface, the innocent suggestion that the person would be welcomed back ended up saving InFocus the cost of recruiting and training a replacement who might never match the departing employee's abilities.

But Lynch-Wilmot says the worker's decision to return was more significant in terms of its impact on the company culture. "It tells your employees that you really mean it when you say your employees are your greatest asset," she says.

It should come as no surprise that such a seemingly insignificant gesture as letting departing staffers know they're still wanted can have a powerful impact, says Jane Weizmann, a senior consultant for Watson Wyatt Worldwide, an human resources consulting firm in Bethesda, Md.

In many instances, employees are looking more for signs that they're considered important than for increased compensation. As such, Weizmann recommends that companies looking to lure highly regarded former employees back into the fold consider simple and persistent contact with those people. "What you don't want to create is a situation where people think, 'So if I leave and come back, I get more?'," she says.

Subtle acts, such as keeping in touch through e-mail, making phone contact after six months and conducting informal surveys, can mean the difference between a person who drifts away permanently and one who returns as a boomerang employee.

The fact that many employers today are making such efforts to remain in contact with former employees represents a fundamental shift.

"There used to be a management philosophy that said if you're not loyal, don't let the door hit you on the way out," Weizmann says. Now many of those same companies see former employees as a great recruitment pool.

One company that is a haven for former staffers is Gensler, a global architecture firm in San Francisco. The company has enough boomerang employees — in the neighborhood of 12% of its staff — that HR can run reports that break down the percentage of boomerangers by department.

Considering the tight market for IT professionals, Gensler's management is particularly eager to bring back technically inclined former employees such as Vyc Carolino.

Carolino joined Gensler's Washington, D.C., office in 1995 as a project-based CAD coordinator. He left in February 1998 to work for another architecture firm in the area, but his former managers stayed in close contact with him.

When the opportunity to rehire Carolino arose last October, he was welcomed back with open arms. There was no big bonus or substantial pay raise, just a clear message that he was wanted and valued, and that he'd be encouraged to expand his skills.

"We wanted to see what things he had learned and give him a chance to move up," says Jeannette Merino, HR manager for Gensler's 200-employee Washington office.

Just six months later, a management position opened up and Carolino was chosen to fill it. He's now responsible for all things CAD, including network management.

Carolino suggests that anyone considering returning to a former employer shouldn't hesitate if the move feels right, which his did.

"If you realize that your previous employer was better than the one you're with now, for whatever reason, there is absolutely nothing wrong with going back," he says.

Kontzer is a freelance writer in San Jose. He can be reached at tony@goodink.com.

Rewards for rejoining

Jane Weizmann of Watson Wyatt Worldwide shares these suggestions for rewarding boomerang employees:

- Offer a boomerang bonus, and determine the amount of such a bonus based on the individual's value to the organization.
- In the case of employees who have been gone for a period of several months, grant them stock options as if they were never gone.
- If employees have been gone a year or longer, grant them stock options for the full calendar year regardless of the date they return.
- Consider restoring boomerang employees' full seniority and provide immediate access to a complete benefits package.

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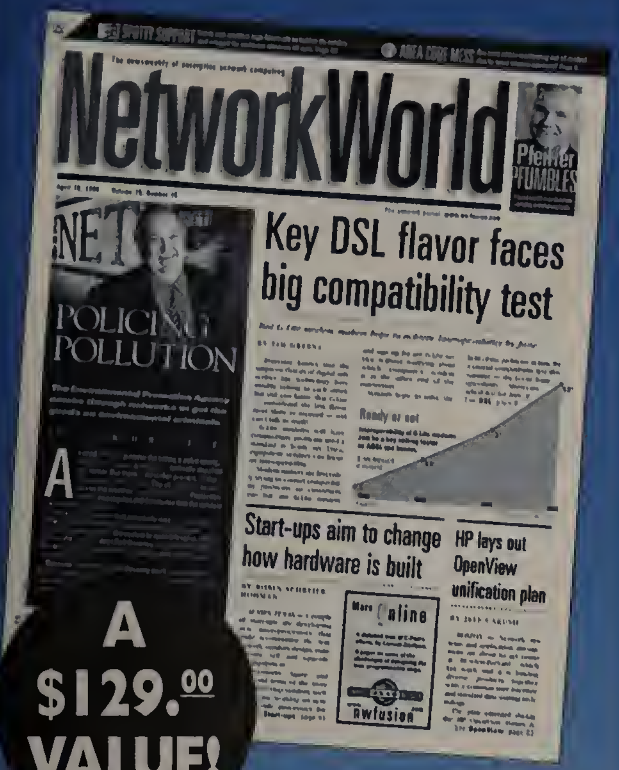

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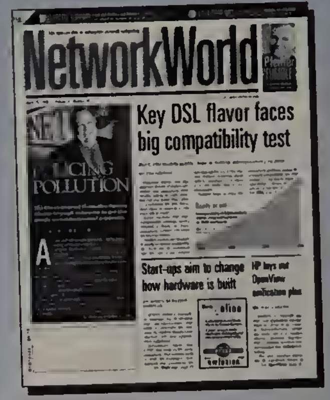
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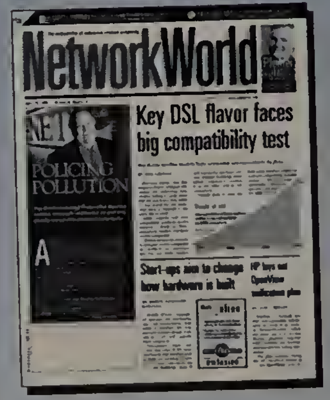
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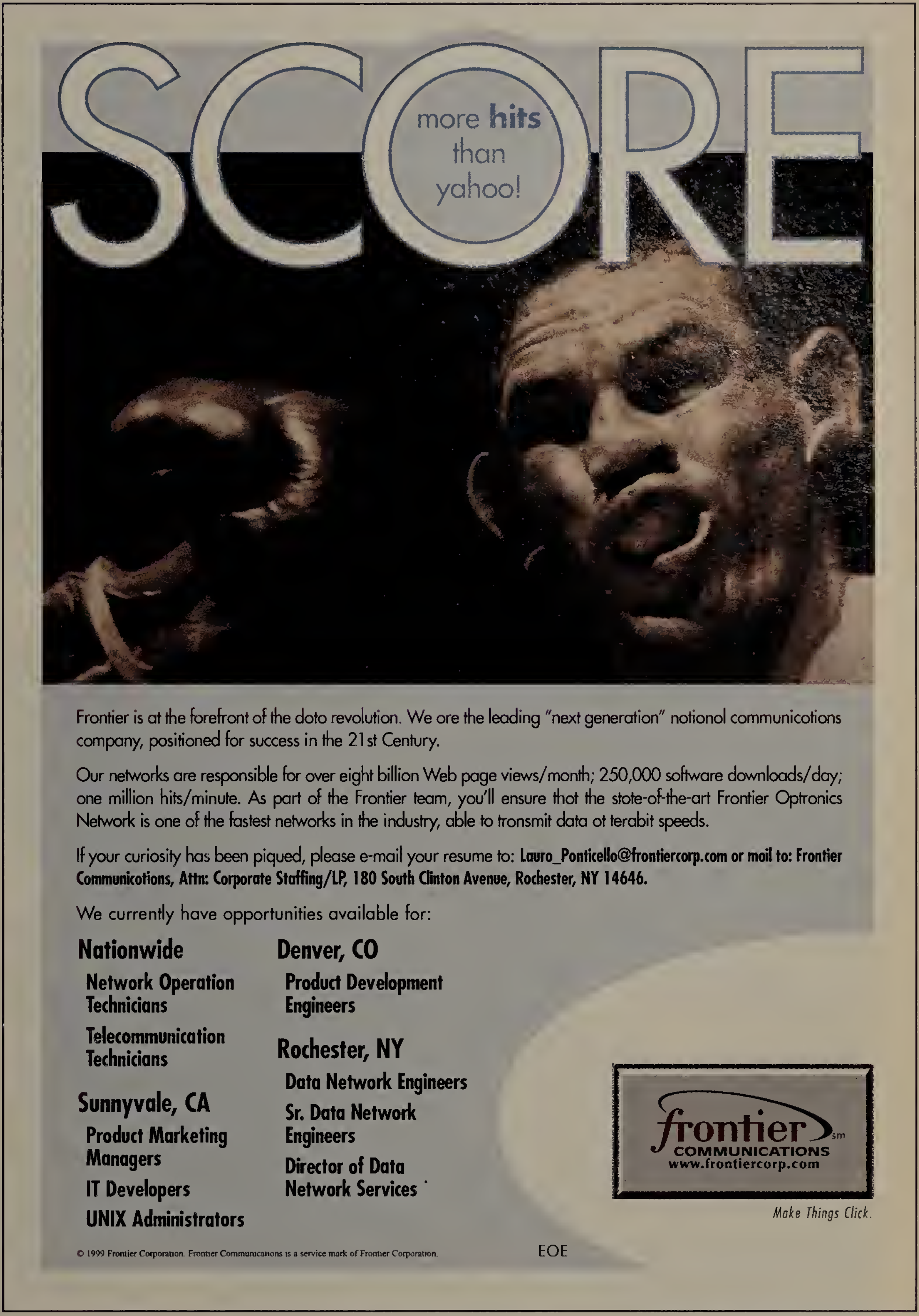

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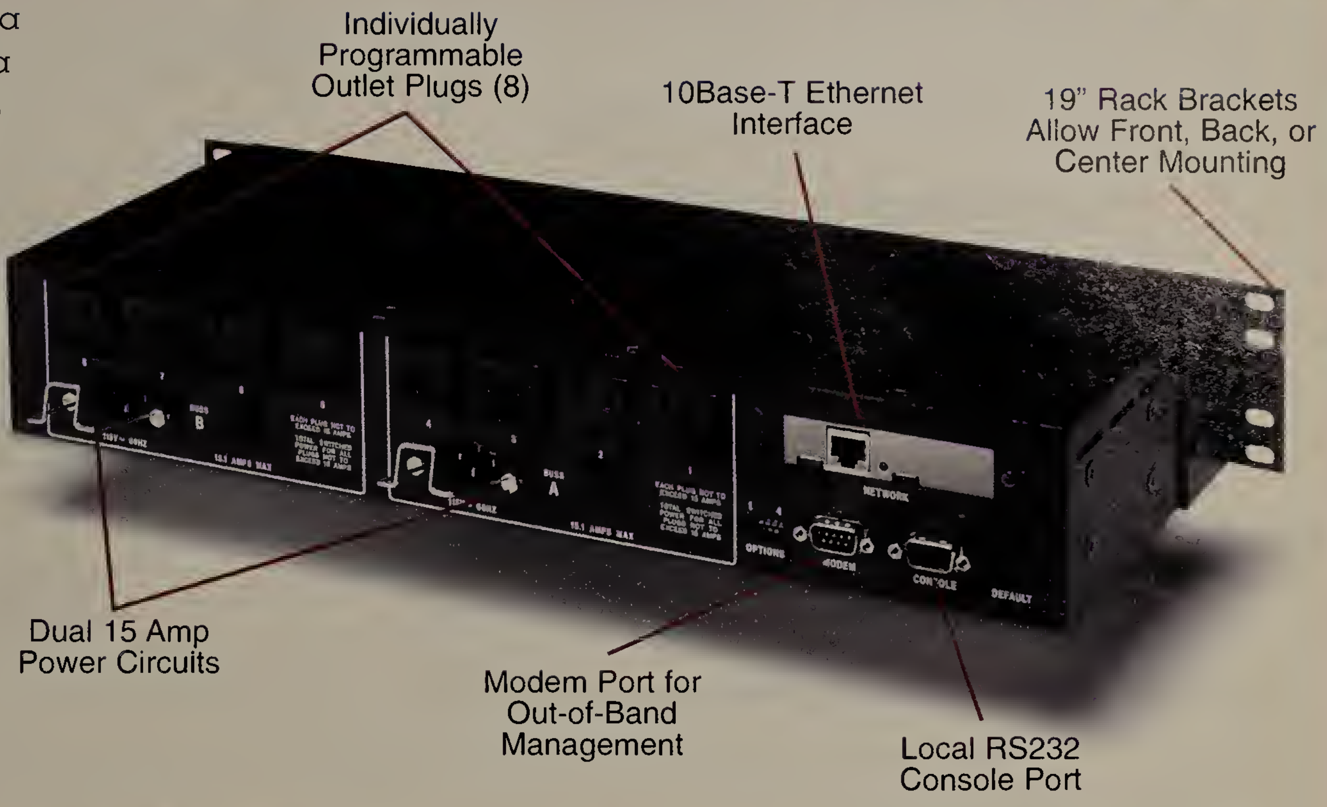
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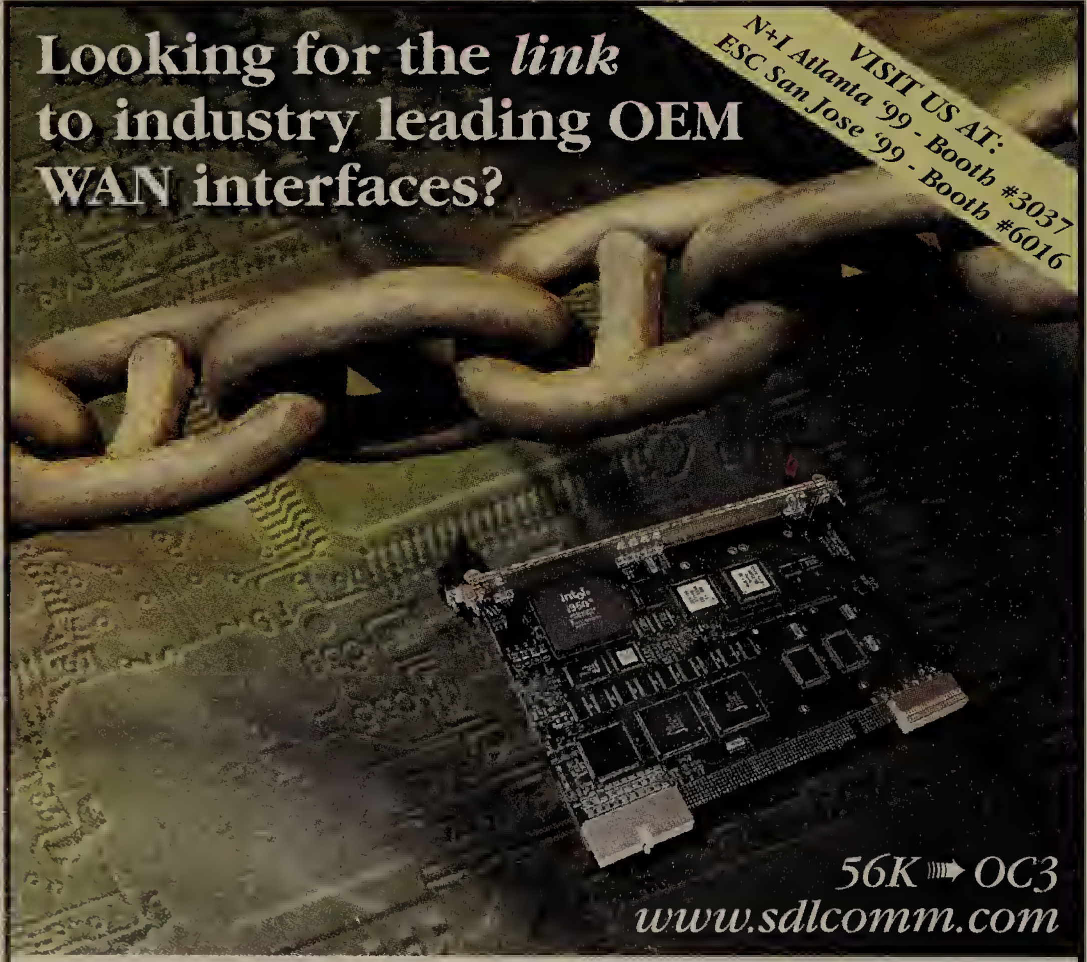

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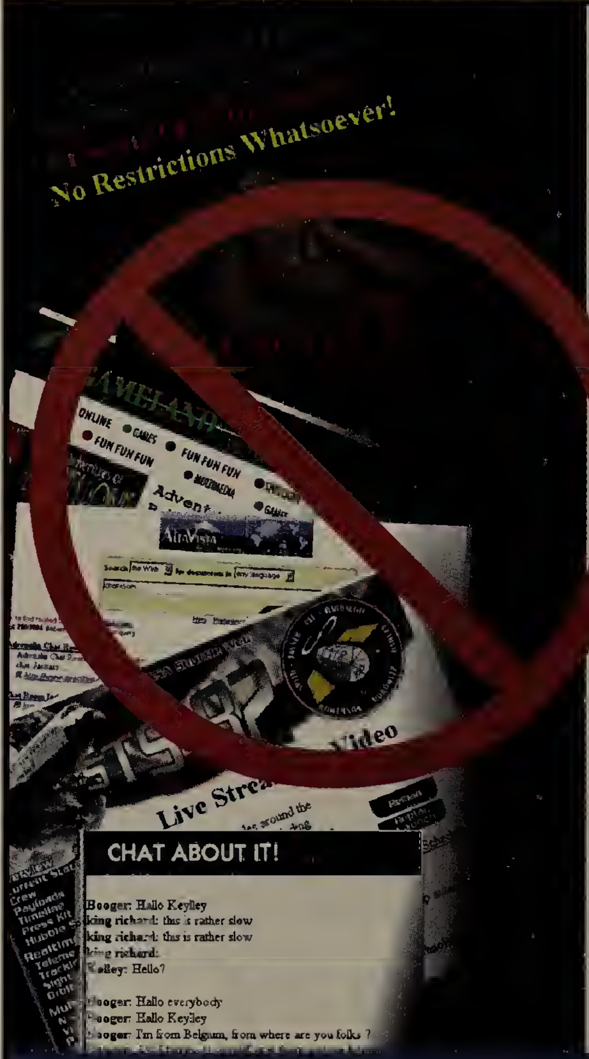
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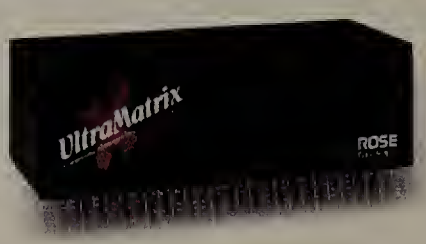

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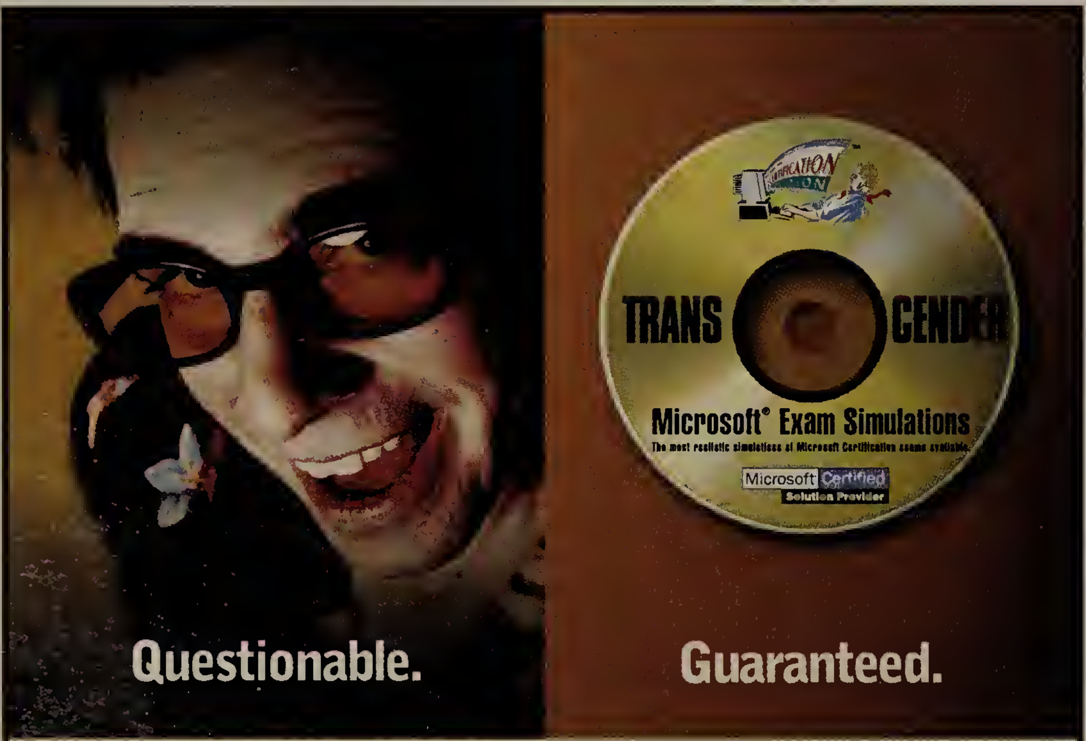
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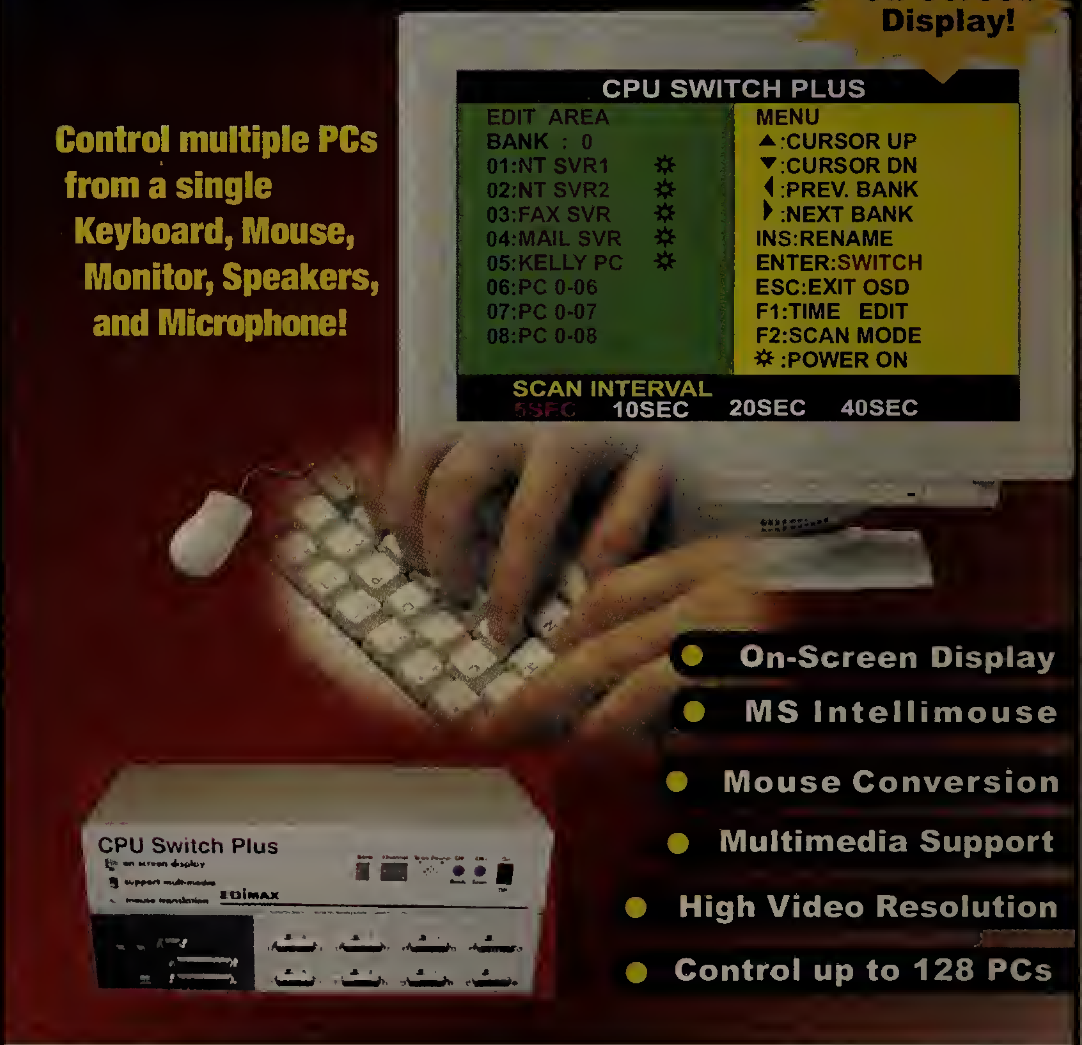

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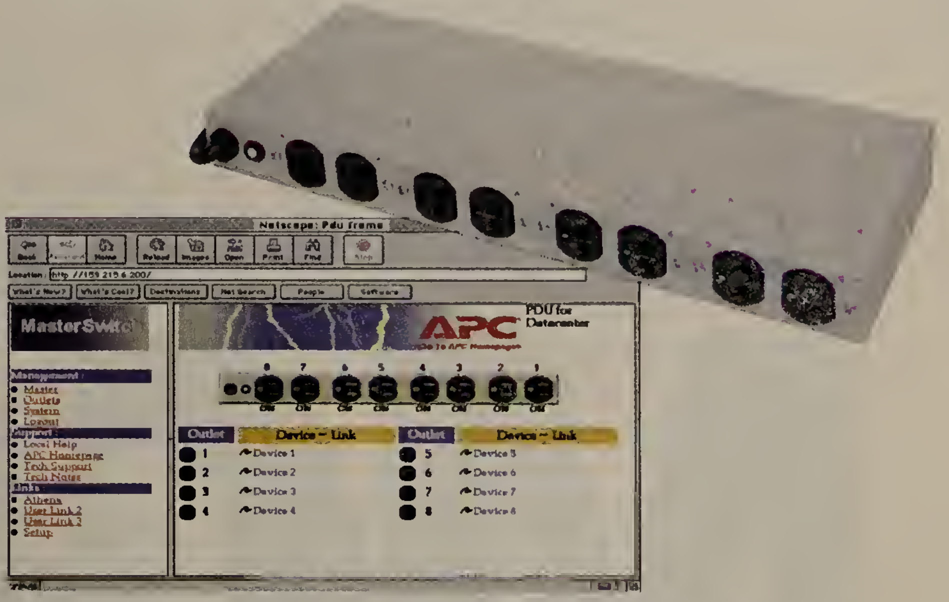

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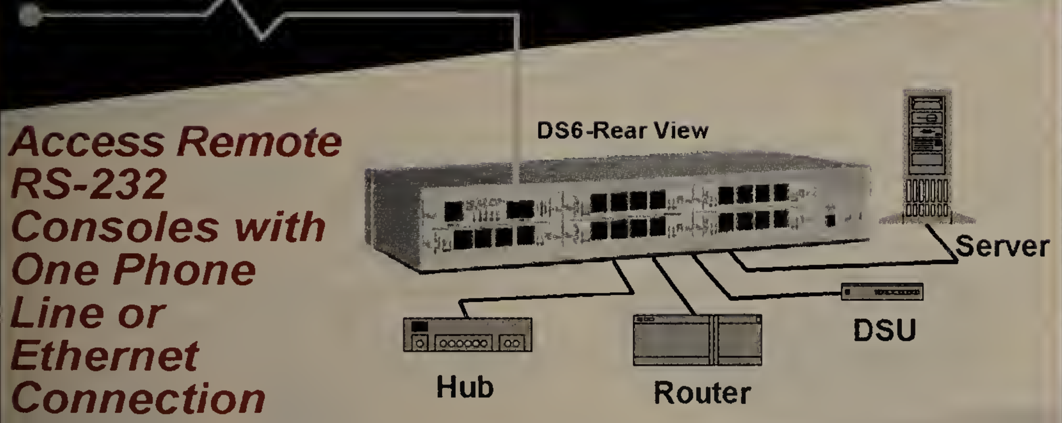

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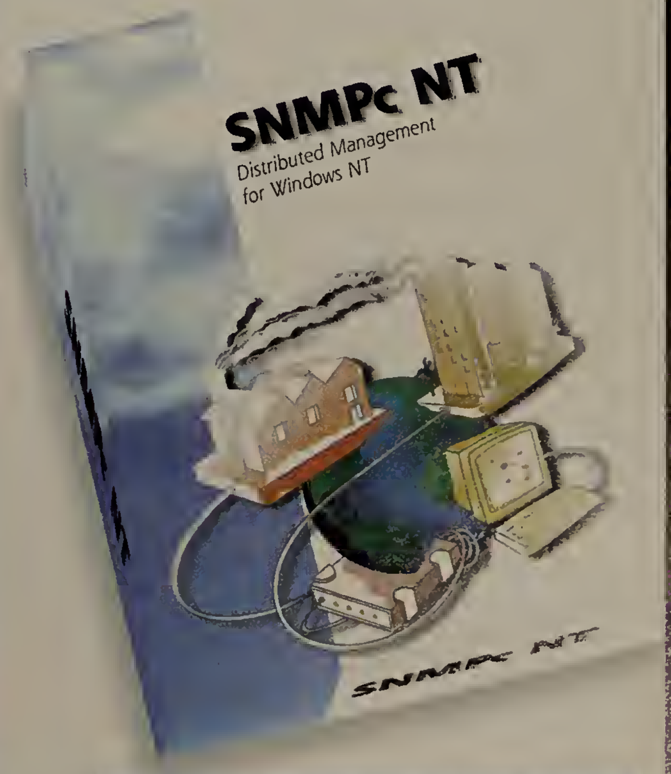

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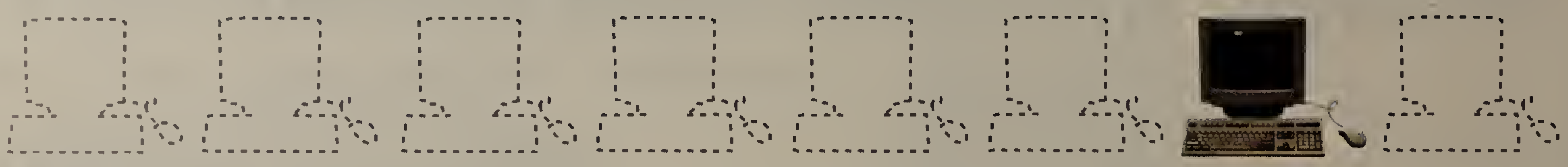

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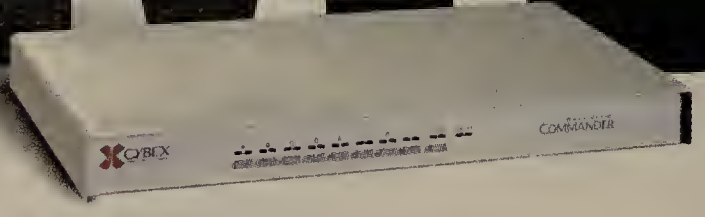

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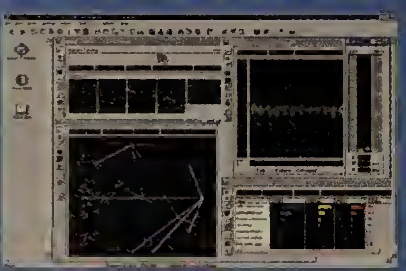

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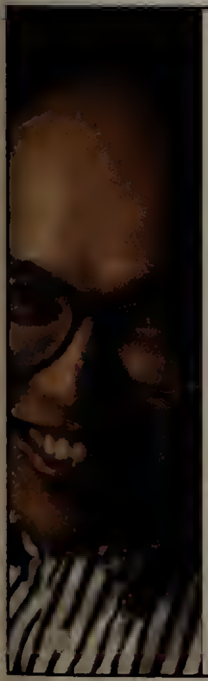

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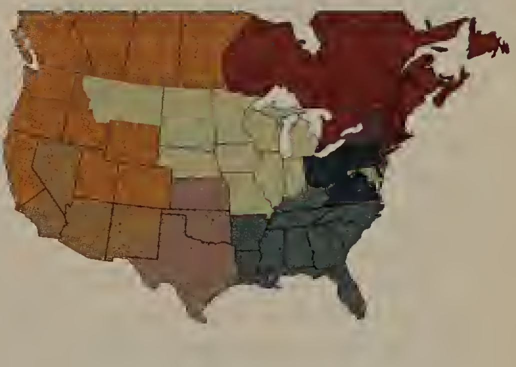

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ISS upgrades intrusion-detection product suite

BY ELLEN MESSMER

ATLANTA — Internet Security Systems will upgrade a handful of products next month and finally overcome an embarrassment associated with its popular Internet Scanner: the inability to update the scanner on a timely basis.

Internet Scanner is a network-based risk-assessment tool that works by running known types of attacks against firewalls, servers and other gear. Version 6.0 will ship with a revamped scanning engine designed to quickly accommodate new ways to scan for network holes.

The problem with the existing version is the difficulty of adding countermeasures on a timely basis. Unless there is a perceived threat on the scale of Back Orifice, for example, ISS only adds a new set of countermeasures to Internet Scanner once every few months. That's not because ISS staff is slow to spot new hacker exploits — they are usually among the first to see the trouble — but because of the way Internet Scanner was originally designed.

"It went to the architecture of the product, which made it necessary to download an entirely new version of the product for new attack signatures," says Patrick Taylor, vice president of marketing at ISS.

By redesigning Internet Scanner to separate the scanning engine's operation from the signatures, ISS has come up with a way to simply download the new attack code the minute it's ready, Taylor says. ISS calls this FlexChek.

Microsoft has been using Internet Scanner for about a year, and Howard Schmidt, Microsoft's information security chief, welcomes the FlexChek improvement: "Our team was saying this is one feature they'd certainly like to see."

Microsoft is using Internet Scanner in several global locations and is starting to deploy another ISS product, System Scanner.

System Scanner is available on more than three dozen server and host platforms, providing instant alerts about unauthorized activity as well as host-based vulnerability checks. Version 4.0, which will ship next month, adds support for Novell's NetWare. And the product will no longer just deliver reports on a timed basis, but will also be able to issue pager or e-mail alerts based on a manager's decision about what is priority. If a hacker manages to install the back-door program called "rootkit," for example, that would certainly be grounds for an instant alert, Taylor says.

ISS also has a new version of Database Scanner in the wings. Version 3.0 adds support for Oracle 7.0 and 8.0. The current version supports Sybase and Microsoft SQL Server.

Internet Scanner 6.0 costs $2,795 for a 30-device license, and Database Scanner costs $995 per database server.

ISS: www.iss.net

Servers,

continued from page 1

ber (see graphic).

FRANK SCHWELIKE

The bake-off winner is: Net Administrator Paula Hinchliffe of Sealmaster.

Several readers concocted schemes based on network growth. Matthew Sabin, LAN administrator for Celwave in Marlboro, N.J., names his servers after the more than 90 Crayola paint samples. After an end user chooses a color for the new server, Sabin laminates the corresponding paint sample and tapes it to the server. Printers are named the same way. Users only have to look at the color on a printer to learn where to direct their print jobs.

Others took a, shall we say, more careless approach to naming servers and domains. They used sexually heated aphorisms or inappropriate language. Take the case of three middle-aged brothers undergoing their second childhood who were allowed to have networks. They named their servers after derivations of the male sexual anatomy and, therefore, will go down in history without being named in this story. Shame. Shame.

These guys weren't particularly smart, says James Gaskin, author of *Corporate Politics and the Internet* and a computer consultant in Mesquite, Texas. "You don't want to tell your CEO that his server is named Oingo-Boingo — people are becoming aware that technology is part of all business aspects."

In many cases, Gaskin says, server names show up in places such as Windows' Network Neighborhood, which can be visible to many employees.

Tom Lowrimore understands the reasons for naming servers appropriately. He manages a NetWare network at a public library where readers access servers day and night. Lowrimore has named his servers after *Sesame Street* characters. When end users log on, the server name shows up in their logon scripts.

Lowrimore adds another element to his assignment of server names — they must be easy to remember. That makes sense, especially when users often have to know the server name to log on to the net. For example, you might name an accounting server "thebank" and a quality-control server "mrfixit."

But don't go the direction of Robert Curry, who admits he will have to find a new naming convention soon. He has named his servers after stars in the constellation Orion. Can you name any of those stars (Alnilam, Altitak or Betelgeuse), much less spell any of their names before at least three cups of coffee in the morning? Curry, however, does conceal server names from end users at his company.

Several network managers named their servers with utility in mind. One IT group named its firewall and security servers after deadly snakes. A hospital IT staff named its server Sphincter.

Others choose names descriptive of expected behavior. Take Eric Wolf, a systems researcher at the University of Michigan in Ann Arbor. He works with Windows NT servers named Toasty (the machine always runs hot) and Crash (for obvious reasons).

The schemes for naming servers are endless, and you won't necessarily find much agreement on how to do it. ◪

Ideas for naming servers and domains

1. Use a descriptive or functional name, for example, the name of the department or what the server does.
2. Never use sexually explicit or inappropriate names. They show up in logon scripts and Network Neighborhood, and show just how mature you are.
3. Plan for growth. Choose names on a theme that has a lot of options.
4. Use names that are easy to remember.

More Online

- Read all the entries — and comment on them.

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THE WINNER IS . . . FRANKENLINUX

Paula Hinchliffe has won our Great Server Name Bake-off as much for the story behind her server's name — FrankenLinux — as for the name itself.

Hinchliffe and a co-worker at Sealmaster, a Kent, Ohio, maker of seals and custom rubber products, cobbled together FrankenLinux from spare and unused parts. Short on funding for a firewall server designed to sit between an e-mail server and the outside world, Hinchliffe and her co-worker "went from office to office, closet to closet salvaging what we could from machines that had been broken." The 386-based machine features a hard drive "that we spent more time than either of us will dare to admit attempting to resuscitate," network cards (each with a different port damaged) and a keyboard with lots of missing keys.

The grand prize: A Dell PowerEdge 1300 server.

For winning our contest, Hinchliffe gets a potential bride for FrankenLinux in the form of a brand-new PowerEdge 1300 server donated by Dell.

The 1300 comes with one or two 400-MHz to 450-MHz Pentium II or III processors with up to 1G byte each of RAM. The server comes equipped with an Ultra2/LVD SCSI controller for the addition of disk space, as well as with Hewlett-Packard's OpenView Network Node Manager Special Edition. Hard drives with up to 36G-byte capacity can be added.

The PowerEdge 1300 starts at $1,500.

Dell: www.dell.com/products/poweredge/pe1300/spec.htm

— Deni Connor

The Scoop

The news behind the news

WHEN FRAME RELAY GOES BAD

It's only when frame relay networks don't work well that people tend to remember what frame relay actually is, and how it can fail despite all its inherent advantages.

Frame relay is a lean, mean fighting machine. Depending partly on the LAN protocol the frame relay network is supporting, the variable length of frame relay's datagrams means you can pack them with mostly payload and very little overhead.

When frame relay emerged in the early 1990s, one of the big ideas behind the technology was to take advantage of improvements in the nation's basic telecommunications infrastructure. Carriers were laying fiber, and switches were gaining speed. As a result, it began to seem superfluous to put error-checking mechanisms into every packet, as the older, slower X.25 protocol did. And it wasn't necessary for every datagram to be the same length, as were overhead-heavy ATM cells.

The trade-off is that frame relay can be unforgiving and even a little dumb. The basic rule is: If congestion occurs, drop any frames that exceed the guaranteed bandwidth the user has specifically paid for — called "committed information rate" (CIR) — and try to retransmit. In addition, carriers usually "oversubscribe" their networks, meaning that if all users try to send traffic up to their CIR or beyond at the same time, the network will choke.

Ordinarily this isn't a problem. After all, the public telephone system works on the same oversubscription principle. Plus, once certain aggregate traffic thresholds are reached, carriers manage frame relay congestion problems by "throttling" back the speed of non-CIR traffic, then if necessary, even CIR traffic.

If that were all that was happening on Aug. 5 and 6, MCI WorldCom users would have experienced a brief increase in latency and then their networks would have returned to normal. MCI WorldCom will say only that something went wrong with a Lucent switch software upgrade on Aug. 5, but experts speculate that the upgrade must have interfered in some way with this congestion-control throttle. And eventually some key frame relay network addresses, called Data Link Connection Identifiers, got lost, forcing company technicians to laboriously rebuild them. Complicating the matter: Congestion-control methods vary among different switch vendors, even within the same carrier network.

— David Rohde

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MCI WorldCom,

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helped," says one Midwest user whose 30-node legacy WorldCom network went down while his 10-node MCI network stayed up. "But in our opinion they couldn't do it even if they wanted to."

Analysts wondered how far MCI WorldCom could now push on pending network projects, such as its plan to unite around an Ascend Communications (now Lucent) switch architecture.

"This raises the question of the integration of the different networks," says Rosemary Cochran, vice president of Vertical Systems Group, a consultancy in Dedham, Mass. "If you have legacy MCI customers who are happy, you don't want to touch them. But then do you have features that are available to one subset of customers and not the other?"

MCI WorldCom's congestion problems began Thursday evening, Aug. 5, as technicians loaded new software into Lucent switches that anchor the old WorldCom frame relay network. Although MCI WorldCom won't specify exactly how, the upgrade appeared to interfere with congestion-control mechanisms and caused excessive latency on customers' permanent virtual circuits (PVC) — the links between carrier-network switches.

Many customers with higher-speed PVCs then had so many frames dropped that the event began to look like an outage. In about half the affected customers' cases, some of the Data Link Connection Identifiers — frame relay PVC network addresses — were destroyed altogether and had to be rebuilt during the course of the week, according to reliable sources.

Before the recent problems began, customers were told to expect an overnight "Emergency Cascade 9000 software upgrade" throughout the legacy WorldCom network, both domestic and international. "The duration of the outage should be no longer than one minute per circuit," said the text of the alert, which was obtained by *Network World.* Cascade 9000 is an old name for a frame relay switch now owned by Lucent following its recent purchase of Ascend.

Any connection hurts

According to postings on Network World Fusion and elsewhere, users with any connection to the WorldCom frame relay network portion of MCI WorldCom's overall network seemed to be affected by last week's congestion problem. Among those reporting problems:

- Users of MFS Datanet's frame relay network, such as the Chicago Board of Trade. WorldCom bought MFS Datanet, along with the rest of MFS, in 1996.
- Users with other carriers who maintain a network-to-network interconnection with WorldCom.
- Some users who had outsourced their networks to EDS, which has a long-standing relationship with WorldCom.
- Some ISPs that use frame relay links into UUNET's Internet backbone.

An MCI WorldCom spokeswoman says that after significant congestion on the night of Aug. 5, users were notified of the problem on Friday and again on Monday. But several users say it was the other way around, with users opening trouble tickets overnight in response to alarms and then encountering a wall of nonresponse.

For example, San Francisco-based insurance company State Compensation Insurance Fund saw anywhere between four and 12 of its 28 WorldCom frame relay sites go down at a time for several days, according to WAN manager Rod Taitano. Despite using an automated maintenance system from an outside vendor that opened and updated trouble tickets with WorldCom starting Friday morning, "I finally got my first fax Tuesday from my account rep," Taitano says. The representative marked the memo's subject line "Oops!" and went on to describe in general terms what Taitano already knew: The network wasn't working right.

Adds Washington, D.C., attorney Hank Levine, who negotiates user contracts with carriers: "MCI WorldCom is being amazingly unresponsive. The customers are going completely and totally ape."

Yet most legacy MCI users — whose traffic travels over Nortel's BayStream routers in a network dubbed HyperStream frame relay — reported no problems. For example, one of the Chicago Board of Trade's automated systems went down because it uses a WorldCom-affiliated network, but other financial users — such as Nasdaq — were unaffected.

This duality caused network managers nationwide to scramble to explain to their corporate executives what was going on, after the general press began reporting that MCI WorldCom's "global frame relay network" was on the fritz.

For example, Allen Lund Co., a transportation broker in La Canada, Calif., suffered nary a blip in its 16-node HyperStream network. "It's been a great network for us," says Ken Lund, the company's network manager. ◪

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Lucent,

continued from page 6

ship with Cisco," says INS President John Drew. But he says he hopes this change will focus on corporate issues and not on whether Cisco continues to refer customers to Lucent for professional services.

"We don't want to see any interruption in the client relationships," Drew says, adding that INS historically has hung on to users for repeat business once it has gotten them.

Meanwhile, Cisco lauded KPMG's ability to pump up Cisco's services prowess.

"We chose to make an investment in KPMG's consulting business because KPMG understands how the Internet will reshape the future of all businesses," said Cisco CEO John Chambers in a statement. "KPMG played an integral role in moving Cisco's own business to the Web. Under this joint venture, our customers can now count on the Internet systems expertise of Cisco and the Internet solutions expertise of KPMG . . . to move their business to the Internet."

Cisco and KPMG expect to close their transaction next month. ◪

Backspin

Gibbs: The paragon of purity?

I never thought that when, in a recent column, I took swipe at those people who use smileys to supposedly enhance the content of their e-mail, I'd get such a response. Many of you wrote to agree, and one gentlemen wrote to not only agree but also take me to task for using my pseudo-XML tags, <example>like this.</example>

His point was that using XML tags isn't much different than using smileys. Hmmm. I never thought of that. Perhaps I will stop using them. Let me know what you think.

Anyway, yesterday I came across another surprise: that California Sen. Dianne Feinstein could be so amazingly misguided. No, make that ignorant. No, make that dumb.

MARK GIBBS

Feinstein has teamed up with that paragon of purity, that doyen of decency, that, that . . . oh, why beat about the bush? That smug, self-satisfied, self-interested politician, Sen. Orrin Hatch, the archconservative Utah Republican who chairs the Senate Judiciary committee. Anyway, Feinstein and Hatch are sponsoring a bill that is so mind-bogglingly bad that I'm running out of adjectives to describe it.

What has so enraged me is that these public self-serving servants are trying to make it an offense to put a link on your Web site to any Web site that discusses illegal substances in such a way that is considered to promote or facilitate the use of drugs.

Note that this is not about your Web site being a drug-promoting site, but merely pointing to another site that does so! And — get this — if the bill becomes law, it will create a new federal felony that will be punishable by a fine and three years in prison. This is insane. Why don't they just go all the way and make linking to a drug-promoting Web site punishable by death?

And how do they plan to define a link? Is a URL that isn't "clickable" a link? What about referring to a drug-promoting Web site by its name instead (as in a reference to "Bongs R Us" as opposed the site's address, http://bongsrus.com). Is that an offense? And a chilling thought: Any journalist who cites any Web site considered drug promoting would also be liable for prosecution.

And what about search engines? Their spiders crawl the Web collecting and indexing content, and unless there's been some big advance in artificial intelligence that I've missed, I can't imagine how they could avoid indexing illegal sites. I can't wait for Altavista, Excite, Infoseek and others to be taken to court.

Which leads me to wonder that if on your Web site you link to a search engine with a query that returns an illegal link, are you guilty? Is the search engine an accessory?

And then there's the question of the intent of the link. It is one thing for a Web site to point to an illegal Web site and say, "This is a cool site," and quite another for it to say, "This is a bad site." Yet under the proposed bill, it appears that both references would be considered equivalent and illegal!

Arguably, the biggest problem with the bill would be that it couldn't be enforced. Can you imagine the scale of the problem in tracking down the owners of drug-promoting Web sites? All those anonymous sites on Tripod, Angelfire and the like? The result will be that the law will go and pick off the easy ones such as the medical marijuana sites.

This is a badly conceived bill that is merely grandstanding on the part of Feinstein and Hatch. If it passes, the bill will represent an intolerable and major blow to the First Amendment and will be a first step toward government control of Internet content.

Thoughts to nwcolumn@gibbs.com

'NET BUZZ

The latest on the Internet/intranet industry

JOHN FONTANA

Is the Internet a better way to start your day than a cup of steaming Joe?

It's a deranged thought for Surrogate Buzz (McNamara is on vacation), but the folks at Mr. Wakeup think it's a swell idea. Their Web site, the brainchild of New York-based iPing, offers free hotel-style wake-up calls to Web (sleepy) heads.

Just type in your phone number and desired wake-up time at the Mr.Wakeup Web site, www.mrwakeup.com, and hit the pillow knowing your telephone will rouse you out of bed.

Talk about convergence of voice and data, these guys are innovators.

This is an advertising-supported free service, so jammy-clad users will have to endure 5 seconds of advertising (Starbucks is an initial sponsor) with their wake-up greetings. Morning messages include horoscope, news, entertainment or motivation. Users can record their own voice, or eventually, pick a celebrity greeter.

Imagine a morning call from Bill Gates (well, maybe that's going too far).

Surrogate Buzz has some other potential uses. How about a strategic Mr. Wakeup call to annoy napping co-workers or when you need a convenient excuse to miss yet another meeting? Nothing like telling your colleagues you just got an "important call" you have to take.

But if you're thinking about getting your old college roommate out of bed at 4:30 a.m., think again. Mr. Wakeup has a validation mechanism to thwart pranksters.

The company is planning a variety of services built on the Mr. Wakeup concept, according to company President Eduardo Yeh. Look for an e-mail notification service via your cell phone and integration with enterprise messaging servers.

But the question remains: What would you rather have in the morning, your horoscope predicting wealth and prosperity or a double-blast of fresh-ground caffeine? How about a call to the coffee maker from the ghost of Joe DiMaggio?

Speaking of making connections. Online Marketing in Brighton, Mass., is about to bring us the Lovegety, an electronic device the lovelorn can wear to find each other. When users get within 25 feet of each other, their Lovegety beeps if the future couple have picked similar settings, such as movie, chat, love or fun. Correct me if I'm wrong, but is this technology borrowed from that old fish-finder device sold on late-night television? Call me a romantic, but whatever happened to the flirtatious glance from across the room, the sly pickup line, and for you anglers, the expertly tied dry fly?

Wow, I know the Internet has a tight grip on network types these days, but it could be worse. The Southern Medical Journal reports that fears of the Internet are replacing Communists, the CIA and the controlling power of radio waves as a frequent delusion of new psychiatric patients. One patient believed Internet bugs had been placed in his ears and could read his mind and control his thoughts. Surrogate Buzz hopes he's just crazy enough to file an IPO.

Surrogate Buzz tries to adhere to the separation of church and the state of the Internet, and he may well have found validation as to why others should follow.

Manage.com has coined the "word" eChristmas as part of a readiness assessment program for eRetailers. Improper preparation for the big season, Manage.com warns, can mean the difference between being eScrooged or eMerry. I think I'm going to be eSick.

Real Buzz resumes next week, at which time Surrogate Buzz will return to his regularly scheduled late-night fishing programs.

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Novell.

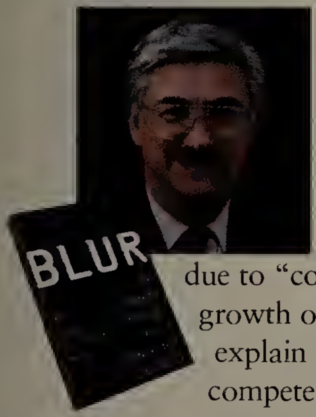
Keynote—Dr. Eric Schmidt, Chairman of the Board and CEO, Novell, Inc.

Dr. Schmidt discusses several trends that are shaping the networking world, comments on the increasingly important role of the public Internet for commercial transactions and presents Novell's vision of a directory enabled network.

FDX℠

Keynote—Robert Carter, Corporate Vice President and Chief Technology Officer of FDX Corp., holding company for Federal Express.

Maintaining a competitive advantage, while simultaneously improving productivity, customer care and the bottom line, are key to FDX. Hear firsthand how server-based computing is playing a critical role in helping FDX to align IT with its business imperatives.



Keynote—Stan Davis, Author of *Blur: The Speed of Change in the Connected Economy.*

Today's businesses have been catapulted into unprecedented transitions due to "connectivity, speed and the growth of intangible value." Stan will explain what it's going to take to compete at the speed of change.

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IBM.

Keynote—David Thomas, Senior Vice President & Group Executive, Personal Systems Group, IBM.

The new millennium will bring many IT challenges, including information integration, convergence and device evolution. Get the latest on how IBM is using server-based computing to provide revolutionary e-business solutions for its customers.

TeleComputing™

Keynote—Jostein Eikeland, President and Founder, TeleComputing, an Application Service Provider with a track record of success.

The Application Service Provider (ASP) industry is red hot. Jostein will share his knowledge of the incredible advantages and benefits that organizations can achieve by adopting the ASP model for deploying and managing business-critical applications.

More Successes

Three information-intensive tracks will give you real success stories and real knowledge.

Track 1—The Role of IT in Business Imperatives. Real stories on how IT is delivering on the promise of helping to generate top-line revenues, enhance profitability and improve customer care. And how server-based computing is key.

Track 2—Real World Solutions. The power of single-point management of applications and servers. The advantages of reliable performance and security. The tangible benefits of lower total cost of application ownership. Get the details from the people who have already experienced it all.

Track 3—Technology Insights. Straight talk on how to achieve 99.999% uptime, deploy applications at record speed, and rapidly develop applications for server-based computing environments.

Analyst Panel: Digital Convergence and Server-based Computing

The digital era has arrived with the convergence of computing and communications. Leading industry analysts provide insight on how server-based computing is alleviating the key computing concerns of reliability, predictable costs, manageability and bandwidth in this digital economy.

CIO Town Meeting

Gary Beach, Publisher, *CIO Magazine*, will moderate a CIO exchange on business challenges and how technology can be friend or foe. Hear what it takes to be agile and responsive in a rapidly changing global marketplace, how to deal with new technologies, the Internet, e-business initiatives and more.

More Insights

Why are 96 of the Fortune 100 already using Citrix server-based solutions? How are Citrix solutions enabling Internet, e-business and ASP initiatives around the globe? Find out during the keynotes by Mark Templeton, President and CEO, Citrix Systems, Inc., and Ed Iacobucci, Founder and Chairman, Citrix Systems, Inc.

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Interactive Exhibition Floor and More
September 14–16

Exciting, comprehensive and cutting-edge describes our NetWorld+Interop 99 Atlanta event. Don't miss this magnificent opportunity to evaluate the hottest products from over 500 of the world's leading networking, telecommunications and Internet technology suppliers.

Meet the players—the powerhouses of the industry and the newest start-ups. Such as, Cisco Systems, Lucent Technologies, Hewlett Packard, Real Networks, Check Point Software Technologies, Inktomi, MCI WorldCom, Gateway, Novell and Microsoft.

Investigate specific areas of interest throughout our interactive show floor:

- Infrastructure Equipment
- Network Management
- Convergence
- Security
- Internet technology
- Start-ups
- Service Providers
- Servers and Workstations
- Enabling Applications
- Application Services

Technology Pavilions

At the exhibition you'll find a series of technology-centric solutions pavilions focused on the hottest technologies and solutions being deployed in the enterprise, service provider and Internet markets today.

- RADVision Voice and Video over IP Convergence Pavilion
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Transform and Grow Your Business

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Power Panel

Network World's Convergence Showdown

Moderated by John Gallant, Editor-In-Chief, *Network World*

This action-packed presidential-style debate will feature top executives from the leading operating system vendors. A panel of experts will grill the software makers before they go at each other in a format designed to cut through the marketing hype and rhetoric.

Start-up City sponsored by *Business Week*

Major networking and telecommunications players are born virtually overnight. See the future of networking, the Internet and telecommunications at Start-Up City. Visit with the hottest new companies on their own turf.

Career Fair sponsored by *Network World*

The Career Fair provides a powerful forum for leading companies to share available job opportunities with qualified and interested candidates. The Career Fair is open to all registered attendees, all three days of the exhibition.

To register or for more information go to:
www.interop.com/Atlanta
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Exhibition Hours: Tuesday, September 14 10:00am–6:00pm | Wednesday, September 15 10:00am–6:00pm | Thursday, September 16 10:00am–4:00pm

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   - ○ 1I. Manufacturing: Computers/Software
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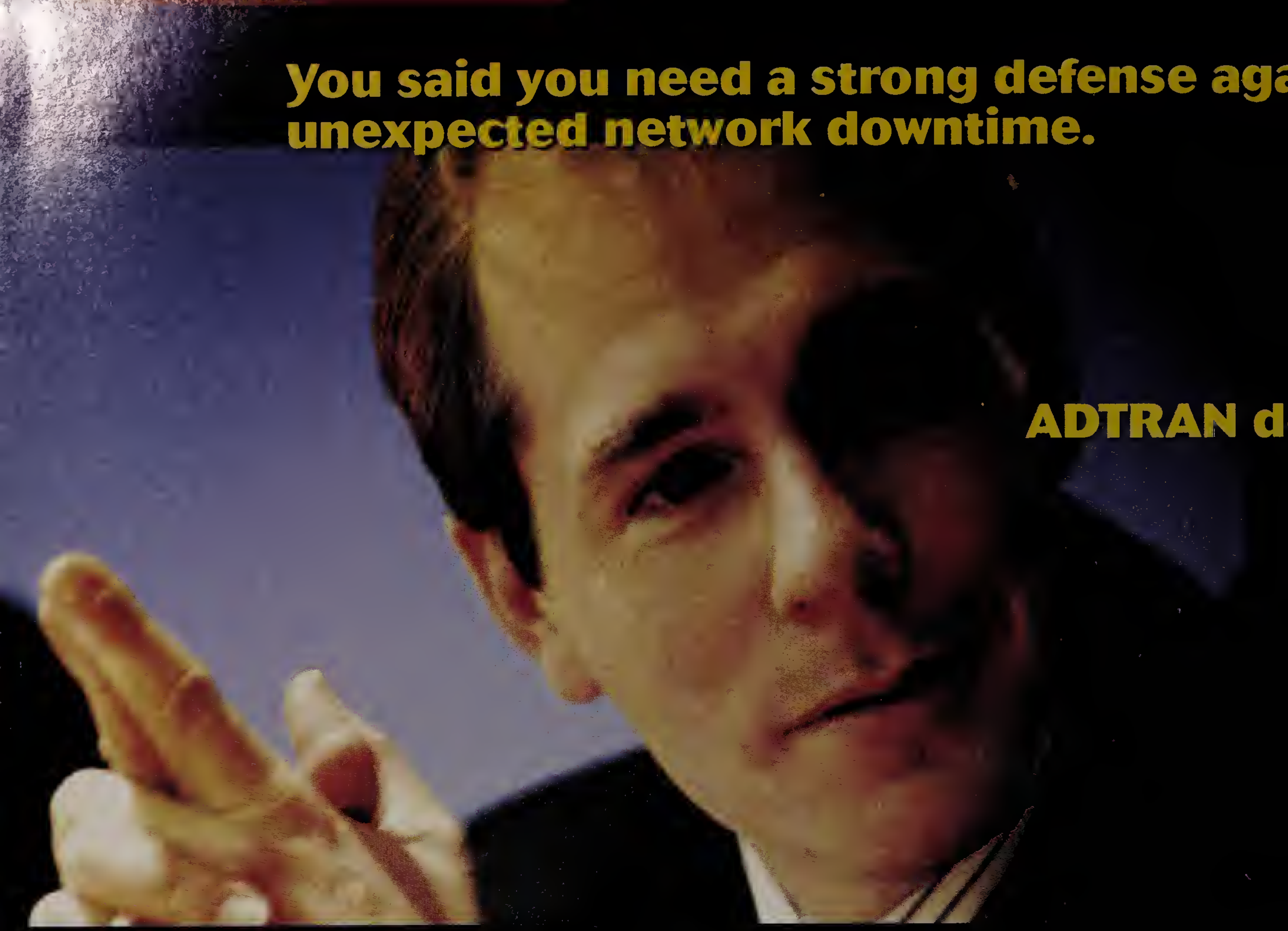

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